JOURNAL OF HIGHER EDUCATION

Vol. 5 No. 3 Spring 1980

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Journal of Higher Education
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Graduate Employment and Higher Education in West Bengal*

P.K. BOSE AND S.P. MUKHERJEE

Although graduate unemployment is a universal phenomenon today, the situation in West Bengal has some peculiar characteristics. As education, industry and culture had their roots in this state, the problem of educated employment had also confronted the people of the state right from the beginning of the last century, as noted by Macaulay in the case of graduates from Sanskrit schools and Madrassahs in 1836. Since then the problem has been there. Only its nature and dimension have changed over time. Evidence of governmental concern for this problem is available in 'Report of the Government of Bengal Unemployment Enquiry Committee' published in 1924. Since independence the problem has taken an increasingly acute form. On the one hand education has expanded quite fast. On the other, employment has increased only at a much slower rate, mainly because the economy of the state has grown much slowly and more slowly than the economy of the majority of the states in the country, particularly in the organized sector.

The rapid expansion of higher education has created as many problems as it has solved. Principal among these are: (1) lack of relevance of the content and structure of the system of higher education to the national development needs; (2) absence of any interaction and coordination between the key production sectors of the economy and the institutions of higher education; (3) rural exodus caused by the urban location of most of these institutions; (4) increase in expectations among the students which could not be met; and (5) most important, the mismatch in quantitative and qualitative terms between the output of the system and its employability.

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* Adapted from the Draft Report of a UNESCO—sponsored project on this subject, prepared by P.K. Bose, S.P. Mukherjee and B.C. Sanyal.

It is in this context that the Department of Statistics in the Calcutta University and the International Institute for Educational Planning (IIEP) undertook a joint research project to relate the development of higher education within the state with the changing needs of the employment market, in both quantitative and qualitative terms, so as to improve the basis for planning the development of higher education and to reduce the mismatch between training offered by the educational institutions and skills needed by labour market.

The functioning of the education system in the past contributes to the 'match' or mismatch it has with the economic system at present. Most important of all, the expectations and attitudes of the students, graduates and employers contribute in a complex way to the relationship between education and employment.

In addition to the analysis of the relationship between education and employment through an analysis of the population, the labour-market and the economic system, four issues were investigated with major emphasis in the study on West Bengal. First, reasons for the secondary school-leavers' pursuit of higher education were examined to find out what are the employment implications of education as perceived by the 'educated'. The second major issue that was investigated relates to the relevance, adequacy and usefulness of the training imparted through the education system in the world of work. The third issue is a consequence of the second. What can be done to correct the inadequacies and inconsistencies in the system in so far as the needs of the world of work are concerned? The last issue that has been discussed is the limitation of the education system in rectifying the education-employment maladjustments. The problem of unemployment can not be tackled by adjusting the education system alone. The education system is only a part of a broader system (covering the relationships between education and employment) embracing the economy, the political set-up of the region, the traditions, customs and beliefs of the people. And a real solution to the present unemployment problem has to be found within some desired changes in the broader socio-politics-economic system.

To ascertain attitudes, expectations and perceptions of (undergraduate and graduate) students, graduate job-seekers, employed graduates and employers about education and employment, four different questionnaires were addressed to these four categories of individuals. The ultimate coverage was in terms of 1928 students, 480 unemployed graduates, 1343 graduate employees and 32 employers. In case of the first three categories, objective sampling methods were adopted to ensure representative samples.

Reasons for Pursuit of Higher Education

Asked to indicate the degree of importance which they attached to each of several factors for the pursuit of higher education, students offered a variety of responses. In fact, each student was asked to mention one or more out of four specified reasons as being very important or important for his/her entry into college or university. Irrespective of personal, familial and even attitudinal characteristics, a stable pattern of responses has emerged in the sample survey—a pattern in which a little over 60% of responses cite "better employment opportunities" or "meeting needs of a specific future career" as reasons for pursuing higher education. In fact the overall finding is that out of 5,096 reasons cited by 1,928 students (each mentioning 2–3 reasons), 1,611 (31.6%) were to meet needs of a specific future career and 1,611 (31.6%) were to have an edge in the employment market. "Study for its own same" constitutes 21.0% of all responses. Bursary incentives could motivate only few students to go in for higher education—only 557 (10.9%) of the responses being of this category. (Respondents were allowed to suggest other reasons also, if they felt it proper. As a matter of fact, 256 (5.0%) of the responses mentioned reasons not stated in the questionnaire.) This clearly reveals the fact that students enter institutions of higher education not so much for acquiring knowledge as for brightening the prospects of employment or for equipping themselves for some specific careers already in mind. It is doubtful, however, that many students can really have some idea about their future career and thus can plan their education accordingly.

True to expectations, a cross-classification of students according to courses being now pursued and reasons for undergoing higher education does indicate some relations between the two. It comes out that bursary incentives (which constitute 21.6% of their responses) are considered as important by students of agriculture, with their responses centering, to the least among all groups, around careers/jobs. The other extreme is to be found among management students to whom the concern of knowledge appeals to the least extent (only 15.8% of their votes being cast in favour of this reason). As many as 70.8% of reasons cited by them are either needs of a specific future career or better prospects in the employment market. They are little interested in scholarship or stipend incentives also. About a quarter of responses from students of social sciences, medicine, law, languages and education go in favour of study for the sake of knowledge. On the other hand, among students of engineering, technology, management and other unclassified subjects, the corresponding percentage is only about 15, the percentage being around 20 among arts, science and agriculture students. (See Table 1)

The overall pattern of responses from unemployed graduates on questions relating to the pursuit of higher education is exactly similar to the one observed among students and among graduate employees. However, some differentials of this pattern distinguish one category of respondents from another.

While the relative frequencies of the different reasons in responses given out by employed graduates were exactly the same as they were in the previous cases, differences in the response patterns caused by personal, domestic, academic or community characteristics are worth mentioning.

None of the medical or veterinary graduates referred to 'study for its own sake' as having motivated them to have higher education, while the

Table 1

DISTRIBUTION OF STUDENTS ACCORDING TO COURSE BEING STUDIED AND REASONS FOR PURSUING HIGHER EDUCATION

Course Being Studied	*Reasons for Pursuing Higher Fducation*				
	Specific Career Needs	*Bursary Incentives*	*Study for Its Own Sake*	*Employment Opportunity*	*Others*
Natural Science	115 (32.3)	44 (12.4)	69 (19.4)	106 (29.8)	22 (6.2)
Biological Science	52 (31.3)	24 (14.7)	30 (18.4)	49 (30.1)	8 (4.9)
Social Science	343 (31.9)	93 (8.7)	259 (24.1)	331 (30.8)	48 (4.5)
Medicine	39 (27.9)	14 (10.0)	34 (24.3)	45 (32.1)	8 (5.7)
Engineering	175 (31.9)	67 (12.2)	88 (16.1)	183 (33.4)	35 (6.4)
Technology	76 (31.7)	39 (16.3)	35 (14.6)	77 (32.1)	13 (5.4)
Agriculture	8 (21.6)	8 (21.6)	7 (18.9)	12 (32.4)	2 (5.4)
Management	40 (33.3)	6 (5.0)	19 (15.8)	45 (37.5)	10 (8.3)
Law	93 (30.7)	27 (8.9)	73 (24.1)	88 (29.0)	22 (7.3)
Commerce	270 (30.9)	88 (10.1)	197 (22.6)	282 (32.3)	36 (4.1)
Language	19 (28.4)	7 (10.4)	18 (26.9)	20 (29.9)	3 (4.5)
Arts	206 (33.2)	62 (10.0)	131 (21.1)	193 (31.1)	28 (4.5)
Science	122 (30.0)	55(13.5)	79 (19.5)	132 (32.5)	18 (4.4)
Education	28 (30.8)	12 (13.2)	22 (24.2)	29 (31.9)	—
Others	4 (30.8)	2 (15.4)	2 (15.4)	4 (30.8)	1 (7.7)
Total	1590 (31.5)	548 (10.8)	1063 (21.0)	1596 (31.6)	256 (5.0)

same reason was stated to be one of the motivations by only 6 (12%) technology graduates. However, in 20% or more of the responses from graduates in social sciences, engineering, language, commerce, arts and natural science this was one of the reasons. Career needs and employment opportunities constitute 65% or more of the responses given out by science, commerce and technology graduates. More than 15% of responses from agriculture and medical graduates are in favour of financial incentives like scholarships and stipends. (See Table 2)

Among the employees who had post-graduate degrees, job/career oriented reasons were predominantly offered by medical and management degree holders, only 9% of the responses from post-graduates in medicine being in favour of 'study for its own sake'—a reason shown by individuals possessing master's degrees in veterinary science and education much more frequently. More than 35% of responses coming from those holding degrees in medicine, management, law and science refer to employment prospects. More than 15% of votes cast by post-graduates in veterinary science, engineering, technology and agriculture go to bursary incentives for higher education. (See Table 3)

Table 2

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO COURSE BEING STUDIED AND REASONS FOR PURSUING HIGHER EDUCATION

Course Being Studied	*Reasons for Pursuing Higher Education*				
	Specific Career Needs	*Bursary Incentives*	*Study for Its Own Sake*	*Employment Opportunity*	*Others*
Natural Science	170 (30.4)	66 (11.8)	111 (19.8)	181 (32.3)	31 (5.5)
Biological Science	52 (30.8)	17 (10.0)	33 (19.5)	51 (30.2)	16 (9.5)
Social Science	276 (29.5)	97 (10.4)	196 (21.0)	306 (32.8)	59 (6.3)
Engineering	125 (30.8)	52 (12.8)	84 (20.7)	128 (31.5)	17 (4.2)
Technology	16 (32.0)	6 (12.0)	6 (12.0)	18 (36.0)	4 (8·0)
Agriculture	7 (28.0)	4 (16.0)	4 (16.0)	8 (32.0)	2 (8.0)
Commerce	254 (31.4)	69 (8.5)	160 (19.8)	278 (34.4)	48 (5.9)
Language	14 (31.8)	4 (9.1)	10 (22.7)	14 (31.8)	2 (4.5)
Arts	83 (28.4)	24 (8.2)	71 (24.3)	100 (34.2)	14 (4.8)
Science	45 (32.1)	15 (10.7)	25 (17.8)	51 (36.4)	4 (2.8)
Others	5 (33.3)	4 (26.7)	2 (13.3)	4 (26.7)	—
Total	1047 (30.4)	358 (10.4)	702 (20.4)	1139 (33.1)	197 (5.7)

Table 3

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO COURSE BEING STUDIED AT THE POST-GRADUATE LEVEL AND REASONS FOR PURSUING HIGHER EDUCATION

Course Being Studied	*Reasons for Pursuing Higher Education*				
	Specific Career Needs	*Bursary Incentives*	*Study for Its Own Sake*	*Employment Opportunity*	*Others*
Natural Science	21 (30.9)	9 (13.2)	13 (19.1)	21 (30.9)	4 (5.9)
Veterinary Science	—	2 (22.2)	6 (66.7)	—	1 (11.1)
Biological Science	30 (28.0)	14 (13.1)	23 (21.5)	29 (27.1)	11 (10.3)
Social Science	57 (30.2)	26 (13.8)	36 (19.0)	61 (32.3)	9 (4.8)
Medicine	5 (45.4)	1 (9.1)	1 (9.1)	4 (36.4)	—
Engineering	28 (29.2)	19 (19.8)	15 (15.6)	30 (31.2)	4 (4.2)
Technology	8 (25.0)	5 (15.6)	5 (15.6)	10 (31.2)	4 (12.5)
Agriculture	3 (23.1)	2 (23.1)	3 (15.4)	4 (30.8)	1 (7.7)
Management	8 (33.3)	2 (8.3)	4 (16.7)	9 (37.5)	1 (4.2)
Law	38 (32.5)	9 (7.7)	22 (18.8)	41 (35.0)	7 (6.0)
Commerce	36 (33.0)	8 (7.3)	22 (20.2)	38 (34.9)	5 (4.6)
Language	28 (29.2)	8 (8.3)	20 (20.8)	29 (30.2)	11 (11.5)
Arts	12 (27.3)	5 (11.4)	8 (18.2)	15 (34.1)	4 (9.1)
Science	21 (32.8)	6 (9 .4)	11 (17.2)	23 (35.9)	3 (4.7)
Others	9 (30.0)	1 (3.3)	5 (16.7)	10 (33.3)	5 (16.7)
Total	304 (30.1)	117 (11.6)	194 (19.2)	324 (32.1)	70 (6.9)

To close this discussion, one notes that there are broad agreements in percentages of responses citing the different reasons for pursuit of higher education among the three respondent groups: students (including a few with current employment—full-time or part-time), employed graduates and graduate job-seekers.

Because of the large numbers of responses involved the distributions of responses over the five reasons (categories) among the three types of respondents come out to be significantly different, one from another (x^2= 59.26 with 8 D.F.).

One may argue that motivations for the pursuit of higher education are not truly revealed by the pattern of responses examined earlier, many of the respondents citing more than one reasons for pursuing courses in colleges and universities. To this effect, responses by those students, job-seekers and employed graduates who maintained single reasons for pursuing higher education can be analysed. It came out that 177 students, 104 employed graduates and 26 graduate job-seekers mentioned single reasons for their pursuit of higher education. While about 17 to 18 per cent of students as well as employed graduates mentioned 'study for its own sake' as the reason for their pursuit of higher education, only one job-seeker made a similar statement. Among employed graduates about 16% of such respondents referred to 'better employment opportunities'. Only 18% mentioned specific career needs. This is somewhat different among students where percentages of respondents citing these two reasons are respectively 40.0 and 37.3. Only one student out of these 295 respondents mentioned financial incentives as a motivator for higher education. Reasons other than the one stated in the questionnaire were cited by nine students, four graduate employees and one job-seeker.

Applying the usual chi-square test differences in the response distribution among students and employed graduates come out as significantly large. This is because employed graduates lay much greater emphasis on employment opportunities than on specific career needs as compared with students who stress these two reasons as equally important. If career and employment orientations are merged, the response pattern does not differ significantly from students to employed graduates, 78% citing career or employment needs and only 18% referring to study for its own sake.

Relevance of the Degree and the Education to Job

It is quite a problem to translate the requirements or skill needs in a job in terms of the content of a course and, given the currently offered courses, to built up a correspondence between jobs and degrees/courses and thence to prescribe minimum (essential) and desirable qualifications for each job category. The problem is rendered difficult by—among other factors—the specificity of skill needs relative to the employing organization for any job and the diversity of knowledge sought to be given in any graduate level course. Of course, the problem is much less serious—though not altogether absent—in the professional field and in technical subjects.

From the survey, it comes out that 81% of the responding employed graduates found their educational qualifications necessary for getting their present jobs, 39% of them even characterising these as very necessary. It means only 19% did not find their educational degrees not necessary for getting their present jobs. A greater percentage (39.2%) of male workers felt that their academic background was very necessary as compared to females (among whom 32.4% expressed the same opinion). On the other hand 50% of females—as against 41.8% of males—opined that their educational qualifications were necessary for the purpose. Discounting the difference in degrees of necessity, it comes out to the same pattern in both the sexes. (See Table 4)

Table 4

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO CREDENTIAL IN RECRUITMENT VS: SEX

SEX	*CREDENTIAL IN RECRUITMENT*			*TOTAL*
	Very Necessary	*Necessary*	*Not-necessary*	
Male	474 (39.2)	506 (42.8)	230 (19.0)	1210
Female	22 (32.4)	34 (50.0)	12 (17.6)	68
TOTAL	496 (38.8)	540 (42.3)	242 (18.9)	1278

All the graduates in technology, agriculture and law and all but 3 (out of 138) graduates in engineering as also all those graduates who offered some unlisted subjects felt their educational qualifications were necessary or very necessary for their present jobs. Strangely enough, one third of the medical graduates are presently in jobs that in their estimate do not require medical degrees. Similar is the case with language graduates. While only 5-6 per cent of graduates in general and biological sciences find their educational qualifications to be really not necessary for getting their current jobs, 18% of arts and natural science graduates, 24% of commerce graduates and 30% of social science graduates have similar experiences. More than half of the graduates in general and biological sciences and in technology, agriculture, management and law—or to put it briefly in science and technical subjects—found their educational qualifications very necessary for securing the jobs they were presently on. (See Table 5)

Table 5

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO CREDENTIAL IN RECRUITMENT VS. GRADUATE LEVEL COURSE

Graduate Level Course	*Cerdential in Recruitment*			
	Very Necessary	*Necessary*	*Not Necessary*	*TOTAL*
Natural Science	88 (46.1)	69 (36.1)	34 (17.8)	191
Biological Science	35 (63.6)	17 (30.9)	3 (5.5)	55
Social Science	78 (24.3)	147 (45.8)	96 (29.9)	321
Engineering	83 (60.1)	52 (37.7)	3 (2.2)	138
Technology	13 (81.3)	3 (18.7)	0	16
Agriculture	4 (50.0)	4 (50.0)	0	8
Commerce	85 (28.5)	142 (47.7)	71 (23.8)	298
Language	3 (20.0)	7 (46.7)	5 (33.3)	15
Arts	34 (34.3)	47 (47.5)	18 (18.2)	99
Science	32 (61.5)	17 (32.7)	3 (5.8)	52
Total	455 (38.1)	505 (42.3)	233 (19.5)	1193

Coming to the question of their formal academic qualifications in relation to their present job requirements, graduate employees are usually inhibited to give out negative replies—even if they feel that to be true. Anyway, 67 (5.01 %) graduates did not respond to this question. Considering only the respondents 58.6 % found their academic qualifications to be both useful and adequate. Another 27.7 % opined that these were useful but not adequate and hence should be only supplemented by other forms of training/education. According to 12.2 % of the employed graduates, their educational qualifications were just irrelevant to the needs of their present jobs, while 19 (1.5 %) respondents characterised these qualifications as even deterimental to meeting needs of the current jobs.

Experiences of male and of female graduate employees do not differ much, except that slightly more males (86 %) find their educational qualifications to be adequate and/or useful for meeting their present job requirements, 15 % of the females (as against 13 % of the males) opining that such qualifications were neither useful nor adequate. (See Table 6)

None of the graduates in medicine, technology, law and unlisted subjects found their educational background to be neither useful nor adequate for meeting their current job requirements. Besides this, no graduates in engineering, languages and science had the perception of the academic qualifications being deterimental. All the graduates in medicine, 83 % of the technology graduates and 70 % of the science graduates bore the impression that their academic attainments were not only useful but also adequate for job purposes. Corresponding percentages exceed 60 in biological sciences, engineering and agriculture as well. Only one third of the graduates in languages and in other unclassified subjects, unfortunately, have this

Table 6

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO THE PERCEIVED RELEVANCE/ADEQUACY OF EDUCATION AND SEX

Opinion	*Sex*		
	Male	*Female*	*Total*
Useful and Adequate	703 (58.7)	40 (56.3)	743 (58.6)
Useful but not Adequate	332 (27.7)	20 (28.2)	352 (27.7)
Irrelevant	145 (12.1)	10 (14.1)	155 (12.2)
Detrimental	18 (1.5)	1 (1.4)	19 (1.5)
Total	1198	71	1269

realisation. Law and language graduates point more to inadequacy of their formal education, something that is also pointed out by sizeable segments of the respondents in other subjects as well. (See Table 7)

Table 7

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO THE PERCEIVED RELEVANCE/ADEQUACY OR EDUCATION AND GRADUATE LEVEL COURSE

Graduate Level Course	*Need for Education*				
	Useful and Adequate	*Useful but not Adequate*	*Irrelevant*	*Detrimental*	*Total*
Natural Science	98 (52.1)	62 (33.0)	25 (13.3)	3 (1.6)	188 (15.9)
Biological Science	35 (63.6)	11 (20.0)	9 (16.4)	0	55 (4.7)
Social Science	185 (58.7)	86 (27.3)	38 (12.1)	6 (1.9)	315 (26.7)
Engineering	86 (64.2)	33 (24.6)	14 (10.4)	1 (7.5)	134 (11.3)
Technology	15 (83.3)	3 (16.7)	0	0	18 (1.5)
Agriculture	5 (62.5)	2 (25.0)	1 (12.5)	0	8 (6.8)
Commerce	167 (56.4)	82 (27.7)	41 (13.9)	6 (2.0)	296 (25.1)
Language	5 (33.3)	6 (40.0)	4 (26.7)	0	15 (1.3)
Arts	59 (59.0)	29 (29.0)	11 (11.0)	1 (1.0)	100 (8.5)
Science	37 (71.2)	12 (23.1)	3 (5.8)	0	52 (4.4)
Total	692 (58.6)	326 (27.6)	146 (12.4)	17 (1.4)	1181

A cross classification of respondents according to the extent to which the educational qualifications were necessary for getting their present jobs and the extent to which these were found useful/adequate/relevant tells something important. Among those graduates to whom these qualifications were very necessary for getting the present jobs, such qualifications were found to be useful and adequate for meeting their job requirements by 72.6% of the respondents. The corresponding percentage is 55.6 among those who looked upon their qualifications as just necessary for securing jobs and is only 35.2 among those who regarded these as unnecessary for this purpose. Percontra, a little more than 30% of the graduates in the latter two categories categoriesed their education as useful but not adequate to meet job needs. The percentage of respondents who find their formal education to be irrelevant to their present job requirements increases from among those who felt their degrees to be very necessary to those who reported their degrees to be just necessary and was much larger (viz. 27.0) among those to whom the degrees were unnecessary.

Similarly, 5.6% of those respondents who regarded their degrees to be unnecessary for securing the present jobs characterised their educational qualifications to be detrimental in meeting needs of their jobs. Very few (not more than 1%) of the respondents in the two other groups had such an extremely negative assessment of their academic qualifications in relation to jobs. Out of the 1004 employed graduates who found their qualifications as unnecessary or just necessary for securing their present jobs, 95 (9.46%) reported their qualifications to be irrelevant or even detrimental to their job needs. This hints at a possible mismatch between job requirements and prescribed qualification requirements for various jobs. (See Table 8)

Table 8

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO THE PERCEIVED RELEVANCE/ADEQUACY OF EDUCATION AND CREDENTIAL IN RECRUITMENT

Credential in Recruitment	*Relevance/Adequacy of Education*				
	Useful and Adequate	*Useful but not Adequate*	*Irrelevant*	*Detrimental*	*Total*
Very Necessary	349 (72.6)	105 (21.8)	26 (5.4)	1 (0.2)	481 (37.8)
Necessary	291 (55.6)	164 (31.4)	63 (12.0)	5 (1.0)	523 (41.1)
Not Necessary	82 (35.2)	75 (32.2)	63 (27.0)	13 (5.6)	233 (18.3)
Total	722 (58.4)	344 (27.8)	152 (12.3)	19 (1.5)	1237

Matching Education with Employment

In theory, at least, one can speak of several alternative ways of making education more responsive to the world of work than it currently is. For instance, one can mention sandwich courses, occasional exchanges between faculties of educational institutions and practising professionals or research workers, vacation jobs for students, introduction of work education or vocational education, obligatory work experience for getting a degree etc.

Feasibility of any of these alternative arrangements depends considerably on the social, political or economic situations prevailing in a particular context. And optimality—which is far more situation—specific—of any one or a few among the alternative courses of action has to be established only through experiences. It is appreciated that in the field of education where experimental units are human beings it is not wise to experiment with different alternatives in order to find out the most effective one. And one better takes cognizance of others' experiences or of opinions about the effectiveness of each feasible alternative form a reasonable cross-section of individuals and institutions involved in the game. Doubts can be shed on the utility of opinions more so when the respondents are adversely or inadequately selected or when they agree little among themselves or when they agree to accept a whole range of alternatives as equally effective.

In the present study, students and employed graduates were presented with seven alternatives in the matter—as indicated in the questionnaires. These were to be ranked in order of preference by the respondents—a rank 1 corresponding to the most preferred arrangement and a rank 7 or 8 (by including any other arrangement that could be suggested by the respondent into consideration) implying the arrangement preferred least. Respondents, however, were not constrained to consider all the suggested alternatives and to rank them in order of preferences. In fact, arrangements not considered as relevant, were not to be ranked.

There was usually a diversity of opinions among the students and among graduate employees about the effectiveness of any of the listed alternatives. And even if the average rank assigned to an arrangement be spoken of, there were variations among these averages corresponding to different categories of respondents. And it was difficult to characterise the different arrangements only in terms of the overall average (taking all) ranks assigned to each and considering all sections of respondents. Such a characterisation was also doubtful because also of the likely inability of respondents to differentiate between closely competitive (in terms of perceived effectiveness) alternatives and their simultaneous intention not to use tied ranks.

Coming to the responding students first, and considering the overall average ranks one finds that, on the whole, students prefer most the arrangement of allowing teachers to refresh their knowledge with related field experience. While this arrangement has an average rank of 2.90, the next most preferred alternative (with an average rank of 3.47) in the opinion of students is a system incorporating formal educational programmes interrupted with related work experience. One can confidently assert on the basis of the responses secured that a system wherein educational programmes are completely separated from work related programmes carries the highest overall average rank of 5.16; although, no category of students marks it as the most preferred arrangement. (See Table 9)

It is just rational to argue that a ranking of these different "matching mechanisms" would depend very much on the educational back-ground of the student. Hence let us examine these rankings among different graduate level courses separately. Students of law, arts, commerce, social science

Table 9

AVERAGE RANK ASSIGNED BY STUDENTS TO DIFFERENT ARRANGEMENT OF THE TEACHING PROCESS TO MAKE EDUCATION MORE RESPONSIVE TO THE WORLD OF WORK

Course Being Studied	Teaching Process A	B	C	D	E	F	G
Natural Science	5.04	2.90	3.83	3.84	3.70	4.18	4.02
Biological Science	5.47	4.04	3.43	3.27	3.30	3.44	3.73
Social Science	4.85	3.57	3.67	3.69	3.08	4.01	3.93
Medicine	4.15	3.60	3.75	3.71	3.79	4.00	4.62
Engineering	5.62	3.67	4.02	3.76	2.67	3.79	3.31
Technology	5.22	2.50	3.86	4.26	2.94	3.70	4.72
Agriculture	5.22	3.33	4.25	3.45	3.40	4.22	2.73
Management	6.10	2.05	4.70	4.27	2.48	3.46	3.82
Law	5.30	3.73	3.97	3.99	3.05	3.14	3.23
Commerce	4.87	3.99	4.10	3.51	2.47	4.00	3.83
Language	4.79	2.78	3.43	3.92	3.74	3.83	4.52
Arts	4.98	3.47	3.94	3.55	2.97	4.11	3.59
Science	6.02	2.93	3.83	3.49	3.07	3.61	3.66
Education	6.09	3.96	3.81	4.19	1.80	4.28	2.66
Over-all	5.16	3.47	3.89	3.70	2.90	3.88	3.78

Note :

A. *Educational programmes completely separated from work-related programmes*
B. *Formal educational programmes interrupted with related work experience (sandwich courses)*
C. *Amount of work experience as a requirement for entry to higher education*
D. *Work experience as a pre-requisite for certification from the institution of higher education*
E. *Teachers being allowed to refresh their knowledge with related field work experience*
F. *Work experience as a voluntary part of the educational programmes*
G. *Educational programmes completely oriented around social responsibilities.*

education as also engineering assign the lowest average rank or the highest average preference to the arrangement of allowing teachers to refresh their knowledge with related field work experience. Possibly these students feel that whatever they can get from these teachers is something not directly linked with employment needs because of the latter's lack of relevant experience. The system of sandwich courses has been preferred most (judged by the average rank criterion) by students of technology, medicine, management, general science and, strangely, even languages. In fact it is difficult to interpret this arrangement for language students. While students of medicine have the sandwich course arrangement as the most preferred, the second best according to them is a system of making work experience as a requirement for entry to higher education. Work experience as a pre-requisite for certification from the institution of higher education has been the most preferred alternatives among biological science students who fix their second choice on the teachers refreshing their knowledge with relevant work experience. It is also interesting to note that students of medicine have disparaged orienting educational programmes completely around social responsibilities—this arrangement getting the highest average rank from this group. Thus both in terms of the number of graduate level courses where it is ranked 1 or the number where it is ranked 1 or 2, the arrangement were teachers are allowed to supplement their knowledge by related field work experience is preferred more than the sandwich course arrangement. While for the former alternative, average ranks have varied from 1.80 (among students of education) to 3.79 (among students of medicine), the range of variation in the latter case has been from 2.05 (among students of management) to 4.04 (among biological science students).

The overall situation among the employed graduates is exactly the same. Of course, there was only a very small difference between the overall average ranks for the most preferred alternative and the one preferred next. One should hasten to add also that among the employed graduates, the overall average ranks for the six arrangements other than the one proposing to completely separate educational programmes from work related programmes are pretty close to one another hinting at a large scatter of opinions and making a choice—based on these opinions—quite complicated. Average ranks assigned to these arrangements by students very over a range of 2.90 to 3.89 as against a range from 3.42 to 3.94 among employed graduates. (See Table 10)

Table 10

AVERAGE RANK ASSIGNED BY EMPLOYED GRADUATES TO DIFFERENT ARRANGEMENTS OF THE TEACHING PROCESS TO MAKE EDUCATION MORE RESPONSIVE TO THE WORLD OF WORK

Current Employment	*Teaching Process*						
Status	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Medical Worker	3.33	1.50	4.67	4.33	4.00	—	2.00
Engineer	5.38	3.11	3.72	3.59	3.23	3.93	3.89
Agricultural Worker	5.50	5.00	2.25	2.33	2.33	4.67	4.00
Manager	5.32	2.77	4.33	3.80	3.04	3.88	3.58
Clerk etc.	3.88	3.68	3.61	3.61	3.47	3.93	3.97
Accountant	4.29	3.00	3.69	4.25	3.64	3.38	3.53
Technologist	6.50	3.62	3.33	3.00	3.25	4.00	3.11
Scientist	4.93	2.69	4.15	4.46	2.71	4.08	3.14
Teacher	4.60	5.60	3.60	4.20	2.80	3.20	4.00
Others	4.36	3.64	3.58	3.71	3.48	3.97	3.27
Over-all	4.38	3.56	3.63	3.71	3.42	3.94	3.59

Among the graduate employees of different occupational categories, the sandwich course pattern is preferred most by respondents in three categories viz. accountants, managers, medical workers, engineers and scientists and is not pinned as a second choice by any other category. On the other hand clerks and teachers prefer mostly the arrangement of allowing teachers to gain adequate field work experience, this arrangement being given the second lowest average rank by agricultural workers, managers and scientists. Agricultural workers alone have shown the greatest average preference for work experience being made a requisite for entry into the system of Higher Education. While technologists prefer most the arrangement of making work experience as a requirement for certification.

Working managers and Management students give the highest and the lowest average ranks to the same two arrangements. They also agree on their second choice. Similar is the case with scientists and students of National or General Science, although biological science students have a different preference patterns. Medical students as well as practitioners assigned the lowest average rank to the sandwich course arrangement. However, the least preferred arrangement among medical students is the one involving educational programmes completely oriented around social responsibilities—an arrangement marked as a second choice by a medical practitioner. There is barely any communality in preferences between students of technology and technologists, between students of agriculture and agricultural workers as also between students of commerce and accountants. The most preferred arrangement remained the same amongst teachers and students of education.

Ranking the different arrangements to ensure a close correspondence between education and employment on the basis of average ranks assigned to them by students and by employed graduates, one finds a moderately large correlation coefficient viz. 4.7 between the two rankings. This means a modest agreement between the two preference patterns—among students and among graduate employees.

Measures Against Unemployment

The propriety or at least the utility of asking students or graduates job-seekers—if not the employed graduates—about possible degrees of effectiveness of some suggested methods to reduce the extent and effect of unemployment in the state may be questioned in certain quarters, but it has become increasingly unwise to just wish them away in democratic planning for education or employment. Eleven alternatives or better complementaries were indicated in the questionnaire and students have considered six or seven of them as very effective or effective. Around 10% of responses indicate that each of the following methods will be effective in tackling the unemployment problem:

(1) Better interactions among employers and institutions of higher education regarding skill needs for jobs, content of current education, employment possibilities of graduates.

(2) Improved career counselling for students at all levels.
(3) Placement services and planned systems for allocation of jobs.
(4) Job oriented educational programmes at higher levels and reduced emphasis on traditional patterns of education.
(5) Job oriented economic policy.
(6) Promotion of self-employment opportunities.
(7) Fair recruitment and promotion policies in all sectors of employment.

The pattern of responses does not change with the current employment status of the students. However, the fact that responses do not concentrate in a few of the suggested categories and are fairly uniformly distributed over a large number possibly point to the fact that respondents are in a helpless situation and like drowning men tend to catch at every straw. (See Table 11)

Table 11

DISTRIBUTION OF STUDENTS ACCORDING TO CURRENT EMPLOYMENT STATUS AND SUGGESTED MEASURES FOR REDUCING UNEMPLOYMENT

Current Employment Status	*Measures for Reducing Unemployment*										
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*
Full Time	31 (5.7)	65 (12.0)	55 (10.1)	57 (10.5)	63 (11.6)	57 (10.5)	26 (4.8)	37 (6.8)	50 (9.2)	61 (11.2)	41 (7.6)
Part Time	16 (5.4)	36 (12.2)	29 (9.9)	33 (11.2)	34 (11.6)	33 (11.2)	13 (4.4)	21 (7.1)	34 (11.6)	28 (9.5)	17 (5.8)
Occasional	17 (6.2)	29 (10.5)	24 (8.7)	30 (10.9)	33 (12.4)	28 (10.2)	11 (4.0)	22 (8.0)	30 (10.9)	31 (11.3)	20 (7.3)
Unemployment	730 (6.0)	1369 (11.2)	1300 (10.7)	1392 (11.4)	1302 (10.7)	1283 (10.5)	613 (5.0)	884 (7.3)	1273 (10.4)	1231 (10.1)	815 (6.7)
Total	794 (6.0)	1499 (11.3)	1408 (10.6)	1512 (11.4)	1432 (10.8)	1401 (10.5)	663 (5.0)	964 (7.2)	1387 (10.4)	1351 (10.2)	893 (6.7)

Notes: (Explanatory) on Suggested Measures for Reducing Unemployment

A. *Control admission based on employability of graduates.*
B. *Develop better interaction amount employers and institutions of education as regards employment possibilities of graduates, skill needs for jobs, content and method of instruction.*
C. *Improve career counselling for students at all levels.*
D. *Establish placement services and planned systems for allocation of job.*
E. *Develop job oriented educational programmes at higher level and reduce the emphasis on traditional patterns of education.*
F. *Develop economic policy oriented towards creation of jobs.*
G. *Create unemployment relief fund for each graduate.*
H. *Promote employment overseas.*
I. *Promote self-employment with soft loans to graduates.*
J. *Establish fair recruitment and promotion policy for all employing sectors.*
K. *Establish policy for localisation of jobs in all employing sectors.*

From the unemployed graduates, responses obtained were very similar. While more responses from those who have just started looking out for a job indicate the effectiveness of better interactions between educational and employment institutions and better career counselling, those who started searching for a job as far back as 1970 or earlier also regard placement services and planned job allocation systems as equally effective. Those who had some regular whole-time job earlier are found to be more in favour of better education-employment interaction, better counselling and planned job allocation systems, while those with experiences of some regular part-time employment do not feel that development of a job oriented economic policy is as effective as the other suggested measures and about 7% of their responses mention the effectiveness of creation of unemployment relief funds for each graduate. One may note that 8.6% of those graduates who started searching for a job last year suggested this as an effective measure to reduce the effect of unemployment. (See Tables 12 & 13)

Table 12

DISTRIBUTION OF UNEMPLOYED GRADUATES ACCORDING TO CURRENT EMPLOYMENT STATUS AND SUGGESTED MEASURES FOR REDUCING UNEMPLOYMENT

Current Employment Status	*Measures for Reducing Unemployment*										
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*
Regular Whole Time	7 (4.4)	21 (13.2)	20 (12.5)	22 (13.8)	16 (10.0)	16 (10.0)	3 (1.9)	10 (6.3)	17 (10.6)	14 (8.8)	14 (8.8)
Regular Part Time	1 (3.7)	3 (11.1)	3 (11.1)	3 (11.1)	4 (14.8)	2 (7.4)	2 (7.4)	3 (11.1)	3 (11.1)	2 (7.4)	1 (3.7)
Casual Whole Time	8 (4.4)	22 (12.0)	21 (11.5)	21 (11.5)	22 (12.0)	20 (10.9)	6 (3.3)	14 (7.7)	18 (9.8)	17 (9.3)	14 (7.7)
Casual Part Time	11 (3.4)	40 (12.3)	39 (12.0)	39 (12.0)	36 (11.0)	35 (10.7)	13 (4.0)	27 (8.3)	37 (11.3)	32 (9.8)	17 (5.2)
Total	27 (3.9)	86 (12.4)	83 (11.9)	85 (12.2)	78 (11.2)	73 (10.5)	24 (3.4)	54 (7.8)	75 (10.3)	65 (9.3)	46 (6.6)

Responses from employed graduates follow just the same pattern as those given out by students—each of the same seven methods being mentioned in about 10% of the responses. Some differences from persons in one occupation to those in another can of course be noticed. Less than 5% of responses from agricultural workers, medical men and accountants mention the effectiveness of a policy to regulate aminssion on the basis of

Table 13

DISTRIBUTION OF UNEMPLOYED GRADUATES ACCORDING TO SUGGESTED MEASURES OF REDUCING UNEMPLOYMENT AND YEAR IN WHICH JOB SEARCH STARTED

Year					*Reducing*	*Unemployment*						
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*	*Total*
1978	1 (2.9)	5 (14.3)	5 (14.3)	4 (11.4)	3 (8.6)	3 (8.6)	3 (8.6)	2 (5.7)	3 (8.6)	2 (5.7)	4 (11.4)	35
1977	3 (3.1)	12 (12.2)	11 (11.2)	12 (12.2)	13 (13.3)	10 (10.2)	2 (2.0)	8 (8.2)	10 (10.2)	11 (11.2)	6 (6.1)	98
1976	15 (5.9)	34 (13.3)	31 (12.2)	31 (12.2)	27 (10.6)	25 (9.8)	10 (3.9)	17 (6.7)	26 (10.2)	20 (7.8)	19 (7.5)	255
1975	10 (4.3)	27 (11.6)	24 (10.3)	27 (11.6)	25 (10.8)	24 (10.3)	13 (5.6)	15 (6.5)	25 (10.8)	23 (9.9)	19 (8.2)	232
1974	17 (6.7)	25 (9.8)	28 (11.0)	27 (10.6)	27 (10.6)	26 (10.2)	11 (4.3)	21 (8.3)	28 (11.0)	24 (9.4)	20 (7.9)	254
1973	5 (2.3)	25 (11.6)	26 (12.1)	27 (12.6)	27 (12.6)	21 (9.8)	5 (2.3)	18 (8.4)	23 (10.7)	19 (8.8)	19 (8.8)	215
1972	17 (3.1)	61 (11.2)	65 (11.9)	66 (12.1)	62 (11.4)	61 (11.2)	30 (5.5)	37 (6.8)	54 (9.9)	56 (10.3)	37 (6.8)	546
1971	20 (4.0)	58 (11.7)	58 (11.7)	59 (11.9)	53 (10.7)	53 (10.7)	16 (3.2)	37 (7.4)	52 (10.5)	54 (10.9)	37 (7.4)	497
1970	47 (4.3)	136 (12.5)	134 (12.3)	136 (12.4)	112 (10.3)	108 (9.9)	54 (4.9)	57 (5.2)	106 (9.7)	113 (10.4)	88 (8.1)	1091
Total	135 (4.2)	383 (11.9)	382 (11.9)	389 (12.1)	349 (10.8)	331 (10.3)	144 (4.5)	212 (3.8)	327 (10.1)	322 (10.0)	249 (4.6)	3223

employability of graduates. Managers give more importance to better interactions between employers and institutions of higher education and to job oriented (rather than traditional) educational programmes at all levels. The latter method is thought to be effective in the largest percentage of responses from all occupational categories except from clerks and scientists. Among scientists and teachers the two measures most often mentioned are establishing placement services of planned job allocation and ensuring fair recruitment and promotion policies in all employment sectors. Teachers also mention measures (4), (5) and (6) as often as these two. The last named measure has been least emphasised (in only 9-10 per cent of responses) by those in agriculture, teaching and managerial occupations but most often by those in the medical profession. The largest percentage of choices in favour of self-employment is found among agricultural workers and medical men. Among teachers only, a sizeable section (5.7%) of responses suggest creation of an unemployment relief fund to cover each graduate. Among clerks, the largest percentage of responses indicate the importance of developing an economic policy oriented towards creation of jobs. Agricultural scientists and professionals indicate—more often than other the role of improved career advice to students at all levels in easing the unemployment problem. (See Table 14)

Table 14

DISTRIBUTION OF EMPLOYED GRADUATES ACCORDING TO CURRENT EMPLOYMENT STATUS AND SUGGESTED MEASURES FOR REDUCING UNEMPLOYMENT

Current Employment Status	*Measures for Reducing Unemployment*										
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*
Veterinary Worker	1	—	—	1	1	1	—	—	1	1	—
	(16.7)			(16.7)	(16.7)	(16.7)			(16.7)	(16.7)	
Medical Worker	1	2	2	2	4	3	—	1	3	4	2
	(4.2)	(8.3)	(8.3)	(8.3)	(16.7)	(12.5)		(4.2)	(12.5)	(16.7)	(8.3)
Engineer	85	106	99	101	109	108	33	76	104	105	58
	(8.6)	(10.8)	(10.1)	(10.3)	(11.1)	(11.1)	(3.4)	(7.7)	(10.6)	(10.7)	(5.9)
Agri. Worker	1	3	5	4	5	4	—	1	5	3	3
	(2.9)	(8.8)	(14.7)	(11.8)	(14.7)	(11.8)		(2.9)	(14.7)	(8.8)	(8.8)
Manager	15	26	23	25	26	24	2	16	21	21	11
	(7.1)	(12.4)	(11.0)	(11.9)	(12.4)	(11.4)	(9.5)	(7.6)	(10.0)	(10.0)	(5.2)
Clerk	171	300	286	309	308	319	131	195	287	309	219
	(6.0)	(10.6)	(10.1)	(10.9)	(10.9)	(11.3)	(4.6)	(6.9)	(10.1)	(10.9)	(7.7)
Accountant	6	12	11	13	15	13	3	12	13	14	9
	(5.0)	(9.9)	(9.1)	(10.7)	(12.4)	(10.7)	(2.5)	(9.9)	(10.7)	(11.6)	(7.4)
Technical	7	10	10	9	10	10	8	7	9	10	7
	(7.2)	(10.3)	(10.3)	(9.3)	(10.3)	(10.3)	(8.2)	(7.2)	(9.3)	(10.3)	(7.2)
Scientist	10	15	13	16	15	15	5	8	15	16	9
	(7.3)	(10.9)	(9.5)	(11.7)	(10.9)	(10.9)	(3.6)	(5.8)	(10.9)	(11.7)	(6.6.)
Teacher	3	4	4	5	5	5	3	2	5	5	2
	(5.7)	(7.5)	(7.5)	(9.4)	(9.4)	(9.4)	(5.7)	(3.8)	(9.4)	(9.4)	(3.8)
Others	380	559	527	554	583	583	244	386	557	561	403
	(7.1)	(10.5)	(9.9)	(10.4)	(10.9)	(10.9)	(4.6)	(7.2)	(10.4)	(10.5)	(7.6)
Total	680	1037	980	1039	1081	1085	429	704	1020	1049	723
	(6.9)	(10.6)	(10.0)	(10.6)	(11.0)	(11.0)	(4.4)	(7.2)	(10.4)	(10.7)	(7.4)

Whether one takes the opinions expressed by individuals in these three different categories—some expecting, others searching for and the rest occupying jobs—with seriousness or not, one has to take note of the inability of the organised sector to have a magic expansion overnight to absorb all job-seekers. In fact, no amount of economic growth that can be envisaged for the state and the country can provide full employment to all those available for work in this vast population. However, self-employment and employment in the rural and unorganised sectors can reduce the extent and effect of unemployment. At the same time, educated persons' willingness or preparedness to be self-employed or to work in rural areas must be first promoted to make such programmes effective. Plans are known to have failed for their poor appreciation of popular sentiments and of commonplace problems.

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Developments in British Tertiary Education

JOHN EGGLESTON

The present system of tertiary education in Britain offers a wide choice not only of courses and institutions but of academic structure, social atmospheres and physical environments in which to study. The range of courses comprises the 'pure' academic humanities like history, English and foreign literature; the increasingly applied social sciences like sociology, politics, social work, economics and business studies; the pure and applied natural sciences like chemistry, physics, biology, metallurgy, geology and environmental studies; the medical sciences from anatomy to veterinary studies; and vocational technologies from agriculture through every kind of engineering to town and country planning. In the further education sector, one may also study every vocational craft and skill from bricklaying to shorthand typing.

The range of institutions is equally wide and is not restricted to the choice between an 'autonomous' university and a public sector college. Both universities and other colleges differ enormously in size, situation, structure and appearance. Oxford and Cambridge are large, collegiate universities with upwards of 10,000 students, their ancient colleges scattered throughout and dominating comparatively small cities. St. Andrews and Durham are also old collegiate universities but smaller, with 3,000—4,000 students. The main London colleges are medium-sized (1,000—5,000), mostly on confined urban sites. The older civic universities are large, unitary organisations with 5,000 students (Reading or Nottingham) to 10,000 or more (Edinburgh and Manchester). The younger ones are smaller (3,000—5,000) such as Exeter, Leicester and Southampton. Keele and the 'New Universities' of the 1960s are all small (2,000—4,000) and on newly built campuses. The technological universities are much the same size, and some have moved out to new rural campuses (Bath, Brunel, Surrey) while others

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are redeveloping their old urban sites (Aston, Salford).

Academic structures also vary, and while the single-subject honours degree is still the norm in England and Wales, with combined honours available in the humanities, pure sciences and social sciences, Scotland has multi-subject first year. New combinations and interdisciplinary courses, pioneered by, though not exclusive to, the new universities, are emerging elsewhere: the foundation year on Western Civilisation at Keele, the 'contextual' courses at Sussex, the three-subject first year at Lancaster, liberal studies in science at Manchester, and so on.

The public sector is even more versatile. In a polytechnic, technical college, college of commerce, college of art, drama or music, one can study full-time or part-time for a variety of qualifications such as: a degree; the Higher National Diploma or Certificate; the Art Teacher's Diploma and various advanced professional diplomas and certificates; the Ordinary National Diploma or Certificate; the craft and technical examinations of the City and Guilds of London Institute; the General Certificate of Education at Advanced or Ordinary level; or the certificates of the Royal Society of Arts in shorthand-typing, secretarial work and office practice. In a college of education one may train to be a graduate (B.Ed.) or certificated teacher, and at some it is also possible to take general, non-professional courses; two-year Diplomas in Higher Education and/or degrees in subjects other than Education.

The further education colleges also vary in size and structure. There are polytechnics like Central London with over 12,000 students, many on advanced full-time and sandwich courses, small colleges of further education with few full-time and fewer advanced students, and evening institutes with none at all. Nearly all are in the centres of towns and cities within reach of their part-time clientele. The polytechnics and larger colleges, however, draw their full-time students from a wider field. Their degree courses, increasingly validated by the new, autonomous Council for National Academic awards whose boards and subject panels and external examiners include many university teachers, are based on modern developments in course design, e.g. polytechnic modular degrees.

Colleges of education also vary in size, character and situation, but for the most part they are small (under 1,000 students). But the day of the monotechnical institution for the teaching profession is over and, in order to provide a wider and more diversified higher education service with wider opportunities for students at a time when the size of the teaching profession is falling (as a consequence of the reducing child population), colleges are being amalgamated, merged with polytechnics or universities or closed.

Admission Requirements

In Britain the minimum passport from secondary education to tertiary education is usually two passes in the Advanced level of the General Certificate of Education (GCE). The standard of A-level roughly corresponds to the French 'bac'. However, within this broad statement there is a growing multitude of variations. The A-level is available in a growing range of subjects/disciplines: in each, awards may be at five levels; A to E. Each institution of tertiary education specifies not only number and the subjects but also *grades* of A-level it requires of the individual students who seek admission. However other criteria may also exist. In Britain selection is the prerogative of individual institutions. They select mainly but not wholly on the basis of the results attained in the advanced level examinations. Most institutions however admit a small proportion of 'mature' students with a wider range of qualifications, both formal and informal. They may also use other information, such as confidential reports from the applicants' schools, and the practice of interviewing at least some of those who apply is widespread.

In general the requirements are related to changing demand: thus a student wishing to study English Literature at Oxford may need to achieve grade As in three prescribed A-level subjects; à student wishing to read Theology at a less well-known university may be able to gain admission with two D or even E grades. The situation may change from year to year: at the time of writing sociological studies are no longer enjoying the popularity of the late 1960s; conversely the applied sciences are experiencing a revival of student interest. The demands of employers may also change markedly from year to year. For non-degree courses admission requirements may be even lower. Moreover, all institutions are able to waive some or all of the admission requirements in special cases—for example for mature students with relevant experience, and there are signs that such admissions will proportionately increase in numbers as the numbers of 'conventional' young students decline in the 1980s. Alone amongst tertiary institutions the Open University (a distance study university) has no admission requirements though prospective students are often advised to achieve specific preliminary qualifications to equip them to follow the courses envisaged.

In Britain, institutions of higher education traditionally select students from among qualified school leavers and students from colleges of further education. Therefore, the problem of *numerus clausus* as such has not manifested itself. However, it can be established that there is an excess of demand over places in medicine, law and English, whereas the number of places exceeds the demand in some science and foreign language subjects. Elsewhere too there are both quantitative as well as qualitative considerations that affect student entry.

The admission arrangements to universities (but not other institutions of tertiary education, which directly handle their own arrangements) are administered by the Universities Central Council on Admissions. This new body was set up in 1961 by the universities of the United Kingdom. The object was principally to solve the problems caused by increasing numbers of multiple applications, i.e. from candidates who applied in the same year to different universities and accepted offers from each. The consequent withdrawals—not always explicit—and the scramble to refill places in the last fortnight before term began—not always with the best available applicants—was unfair to both candidates and universities and drove the latter, with strong encouragement from the schools, towards a co-operative solution. In a recent publication of UCCA (*This UCCA Business*, 1977) it is stated:

> The duty of the Central Council is to enable the business of admission to undergraduate courses in all the constituent United Kingdom universities to be dealt with in an orderly manner and equally important, in a way which allows each candidate freedom to make a responsible choice and each university freedom to select its own students. These two freedoms are reasonable, fundamental and immutable pillars of the UCCA scheme.

The account presented so far can give no adequate indication of the detailed individual consideration of individual candidates by individual universities and their departments, which, in certain circumstances, may be 'designed to stimulate participation of disprivileged groups'. The open access policies of the Open University constitute a prime example of such considerations.

The Open University first offered courses in 1971 and by 1976 it had nearly 51,000 undergraduate students, most of whom were over 21 and working. The Open University provides part-time courses leading to degrees; tuition is by a combination of television, radio, correspondence texts, broadcasts and personal tuition. As we have already noted, no formal academic qualifications are required for entry. Post-experience courses of varying duration are also provided. A singular feature of the system is the award of degrees on the basis of credits gained by success at *each* stage of the course rather than on the basis of a final examination. Six credits are required for a B.A. degree and eight credits for a B.A. Honours degree. The University offers a variety of combinations of courses, academic levels, and different methods of obtaining the required credits. [For the Honours degree at least two of the credits must be at the higher levels (grade 3 or 4) or academic content.]

Grants to Students

The arrangements for financial assistance to students have been rationalised in recent years. There are now two main categories of grants to students for post-school education—mandatory (that is where a local education authority has a duty under law to give a grant to a student if he is eligible), and discretionary (where a local education authority decides on its own policy and considers individual cases accordingly). The mandatory awards scheme applies only to the advanced courses which are generally started at 18. Most students on higher education courses receive some financial assistance from public funds. Any student who is admitted to a first degree course of a university or of the Council for National Academic Awards; to a certificate course of initial teacher training; to a course leading to a Dip HE or Higher National Diploma; or to any course designated as comparable to a first degree course, is normally eligible for a mandatory award provided he has lived in the United Kingdom for three years immediately before the first year of the course and satisfies other conditions set out in the Awards Regulations, for example relating to previous study.

A mandatory award covers fees and maintenance during term-time and the Christmas and Easter vacations; there is nothing in the award to cover the summer vacation. The full value of the grant may be reduced according to parents', spouse's or the student's own means. In addition many industrial organisations and some government departments have schemes for students with promise. There are also educational trust funds and charities which give grants for specific purposes.

The Department of Education and Science ('The Ministry') provides awards for students taking courses at the long-term residential adult colleges. It also offers state studentships for advanced postgraduate courses or research in the humanities on a competitive basis for among candidates considered to be specially qualified for postgraduate studies in this field; and postgraduate bursaries for other courses of postgraduate study in the humanities, generally of a more vocational nature. The Social Science Research Council and the Science Research Council offer somewhat parallel awards for students in their fields.

Enrolment

In the United Kingdom, the enrolments in tertiary education increased by about one-half between 1954 and 1960, more than doubled in the next decade, but have grown very much more slowly in the three years 1971 to 1973. Therefore the government's forecasts of enrolments by 1981 have been subject to regular downward revision, from a forecast of 7,50,000 in 1972, to 700,000 and then 6,40,000 in 1974. In 1976 a figure of 600,000 was envisaged, followed by a revision in 1977 Sown to 560,000. These revisions are not due to demographic factors since the size of the 18-year old age group will increase between now and 1980. Fundamentally the need for successive revisions can be attributed to revisions in the forecasts of the numbers who will qualify to enter tertiary education. The previous growth in the proportion of the age-group staying on at school has slowed down as well as the proportion obtaining the required qualifications for admission to tertiary education. A more recent factor is an apparent decline in the willingness of qualified leavers to take up tertiary education.

The annual growth in enrolment in post-secondary education is to be seen in the following tables:

The graph shows the relevant population profile of 18-year olds to 1994 (though of course it cannot show the proportion of the group who will wish to seek entry to universities, polytechnics or colleges). A particular dilemma is the decision whether or not to 'tunnel' as the dotted

ANNUAL GROWTH OF ENROLMENTS IN POST-SECONDARY EDUCATION (UNITED KINGDOM)

	1968-9	*1969-70*	*1970-1*	*1971-2*	*1972-3*	*1973-4*	*1974-5*
University Type	+ 5.83	+ 4.02	+ 4.06	+ 2.97	+ 1.75	+ 1.79	+ 2.57
Non-University Type	+ 11.78	+ 4.65	+ 4.63	+ 4.34	+ 1.82	+ 3.91	+ 2.17
Total Higher Education	+ 8.61	+ 4.32	+ 4.34	+ 3.63	+ 1.78	+ 2.82	+ 0.23

ANNUAL GROWTH OF NEW ENTRANTS IN UNIVERSITY TYPE OF EDUCATION (UNITED KINGDOM)

	1968-9	*1969-70*	*1970-1*	*1971-2*	*1972-3*	*1973-4*	*1974-5*
University Type	+ 4.61	+ 4.53	+ 2.28	+ 1.87	+ 1.61	+ 1.34	+ 1.08

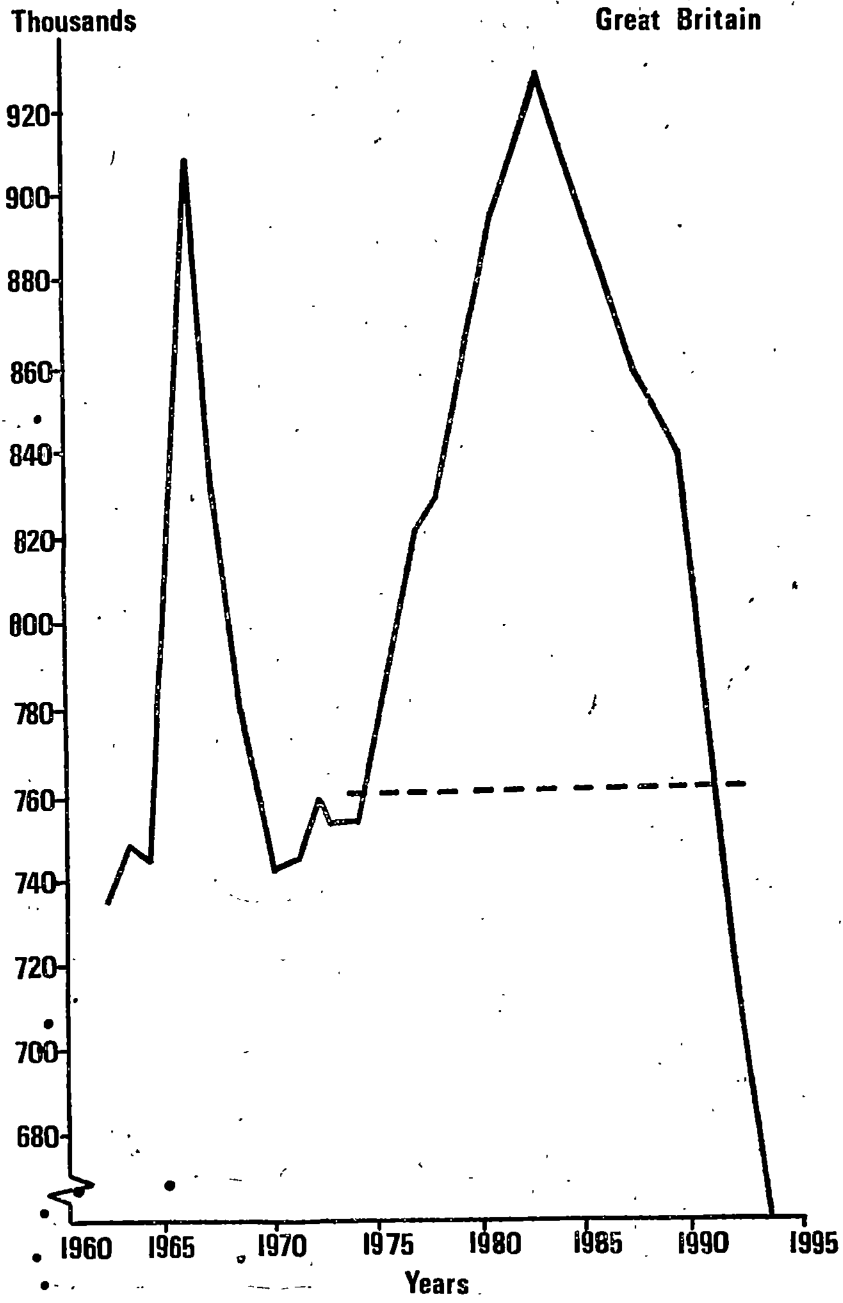
Source : Paedagogica Europea Vol 12, No. 1 1978 'Student Flows in Higher Education' (Chapter 3).

line indicates—or to increase the number of places to match the rising age groups in the short term.

The issues have recently been considered in a discussion document issued by the Department of Education and Science and the Scottish Education Department entitled 'Higher Education into the 1990s'. The intention of this document is to promote discussion about the various strategies open to higher education to 'tunnel' through it. It says: "At present unit recurrent costs (averaged out across higher education as a whole), the 'hump' between now and 1994, when the projected numbers fall back to approximately the present level, represents a total additional cumulative expenditure of about £2.5 billion." The two departments also calculate that additional capital expenditure of about £200m would be required to accommodate the 600,000 students expected at the peak of the hump.

Two other projections of future demand are outlined in a 'high variant' projection that the proportion of the age group qualified for and willing to enter higher education will increase from the present 14 to 21 per cent over the next sixteen years. This would mean that the full-time student population would reach a peak of 660,000 at the end of the 1980s and then fall back to 5,94,000 in 1994-5.

An alternative 'low-variant' projection assumes that the participation rate will only rise from 14 to 15 per cent. A different profile would arise: the peak in the middle 1980s would only be 5,51,000 and there would be a decline to less than 4,63,000 ten years later—well below the present total. The median projection assumes that the participation rate will increase to 18 per cent.



18 Year Old Population in Great Britain – January 1962 – 1994

The two departments go on to offer five possible 'models' for the future, emphasising that they are not so much policy options but "the strands out of which policy might be woven". The first three assume that the pattern of higher education would remain much as it is now; the fourth and fifth explore the consequences of changes.

Model A assumes that the system would be expanded and then contracted in accordance with the projected numbers. This would mean acquiring buildings and staff to cope with the 'hump', which by the middle 1990s, would no longer be needed.

Model B assumes that the scale of expansion after 1981 is deliberately reduced so that the need for painful contraction after 1990 is similarly reduced. The penalty is that this involves a severe risk of making it much more difficult for school leavers to enter higher education in the years of the peak.

Model C is identified as a 'resources' approach. It would involve providing in full or the expected 'hump' but on a basic budget. This would be done by renting the necessary buildings, and employing the necessary staff on a temporary basis, or by taking extra students without any increase in buildings or staff. The latter would involve a 7 per cent squeeze in present building standards and staff/student ratios.

Model D is an attempt to maintain the intake of students at the required level to satisfy demand but to constrain their total number. This could be done by encouraging more students to take two-year rather than three-year courses, to study part-time rather than full-time, or to defer their entry into higher education for a period after leaving school.

Model E, perhaps the most speculative, raises, but does not consider in detail, the possibility that because of social, cultural and economic changes, there may not be after all a decline in the number of students in higher education in the 1990s.

The debate over the respective merits of these models is, at the time of writing, the most active and extensive of all the concerns of British higher education.

Research in Tertiary Education

Research has always been seen as an important role of the university—as important or even more important than teaching. Research may be institutional in which university or departmental programmes are undertaken often funded or 'sponsored' by private foundations or government research funding bodies which now include the Social Science Research Council, the Science Research Council and the Medical Research Council. Alternatively, it may be individual research undertaken by members of staff. Indeed must universities have a requirement to 'undertake research' that is written into the contract under which academic staff are appointed. A normal expectation of research activities would 'in its broadest sense' be one-third to half of the working week: more in a 'research oriented' department, less in a 'teaching oriented' one. Traditionally the universities have specialised in pure research for which no immediate or urgent application was envisaged: applied research has been seen to be more the responsibility of industry and commerce. Yet in recent years universities have increasingly undertaken substantial applied research commitments, very frequently under contract from government departments (particularly in the field of science and applied social research) and from industry. Reservations about undertaking 'commercial research' have largely disappeared from most British universities. Indeed such contracts are now keenly sought.

The polytechnics and other 'public sector' institutions have, on the whole, a more limited research orientation. In the past, all have been predominantly teaching organisations. But at the present time they are making strenuous efforts to establish a greater research involvement and are achieving a considerable success in this, both through the efforts of individual members of staff and through successful competition for public and private research funds.

Unfortunately there is no easy way to quantify the changing research output of British institutions of tertiary education in the late 1970s. The reports of the private foundations and government funding bodies show an overall slowing or even a decline of support in real terms. But within those figures there is evidence of a relative increase in funding of research in non-university institutions of tertiary education though university and university linked institutions still receive a substantial majority of available funds. There are no reliable indications of the distribution of industrial and commercial funds though there is evidence that some of the polytechnics have a well-established record in obtaining them. Concerning the most widespread research activity—that of individual academics, there are simply no records other than those 'lists of publications', completed theses, and the public recognition that the most illustrious achieve. But it is clear that individual distinction in research, like research itself, is now spread more widely throughout tertiary education than heretofore.

Costs of Tertiary Education

The two sectors of the binary system, the 'autonomous' universities and the 'public sector', are administered and financed quite separately. Apart from Northern Ireland where the government funds all institutions of higher education directly, the universities of Britain, with the exception of the Royal College of Art and Cranfield Institute of Technology with their direct grants from the Department of Education and Science, are financed mainly through a unique British institution, the University Grants Committee. A committee of unpaid senior academics and leading business and professional men under a full-time chairman (the only paid member), it advises the government on the universities' needs and distributes the block grant it receives between them as it thinks fit. As a buffer between the universities and direct state control, it seems to be a main safeguard of university autonomy. In recent years, however, the University Grants Committee has become less of a buffer and more of an instrument of government policy. In 1964 it was transferred from the Treasury to the Department of Education and Science which, with the opening of the universities to parliamentary audit in 1968, gained direct access to their accounts. With the enormous increase in the costs of higher education the University Grants Committee recurrent grant has risen from £9 million in 1947-48, to £56 million 1961-2, and to £426 million in 1974-5. Capital grants for buildings, equipment and furniture have fluctuated, from about £4 million a year in 1947-52, to £83 million in 1965-6 in the expantionist period, and back to £33.5 million in 1974-5 in the current deceleration of growth. The University Grants Committee now provides about 90 per cent of both recurrent and capital expenditure, the rest coming from fees, endowments, donations and research contracts. With such large sums at stake the University Grants Committee has been forced to increase its supervision of university expenditure by means of 'memoranda of guidance' recommending certain developments and discouraging others, and by a tight control of new buildings and capacity planning, exercised through a Secretariat of over a hundred officials. At a time of steep inflation the University Grants Committee limits on expenditure are forcing the universities to make large economies and to take more students without corresponding increases in staff or facilities.

The further education sector is financed by the Department of Education and Science in England and Wales, the Scottish Education Department and the Northern Ireland government, and—in Britain—mainly through the local authorities (except for the thirteen Central Institutions financed directly by the Scottish Education Department). Most local authority income for further education comes in the form of a block grant, but the Department of Education and Science controls expenditure, more formally but in much the same way as the University Grants Committee controls the universities. In England and Wales the voluntary colleges of education and certain other institutions receive direct grants from the Department of Education and Science. Further Education in England and Wales is co-ordinated by a system of Regional Advisory Councils, representing the local authorities, the teachers and other interests, co-operating closely with the Department of Education and Science. There are nine Regional Advisory Councils in England, five in Scotland, and in Wales. They were established around 1947/8 and contain representatives from local education authorities, institutions of further and higher education, teachers and industry and commerce, together with assessors from the government education departments. The function of the councils is to advise on all forms of further education, which is normally taken to include all forms of education beyond compulsory school age other than in universities and training colleges, and with the exception of full-time secondary school education beyond that age. In particular they co-ordinate the provision of further education courses within the region so as to ensure adequate provision without unnecessary duplication. They also, among other functions, provide an opportunity for the discussion of further education questions and provision on a regional basis, act as a channel for the dissemination of information, and inform the educational bodies of the needs of industry, commerce and the professions.

The growth of recurrent grants for the universities has, according to the available figures, continued at least until the year 1973-74. In December 1973 the British government announced that, contrary to former practice, no supplement for increases in costs, due to inflation and annually measured by the Index of University Costs, on items other than salaries of academics and those paid on related rates, would be made during the year 1974-75. Academic and academic-related salaries account for about half of university expenditure and it was formerly the practice for increases here to be fully atched by additional Government grant. In the event, costs rose above 12% in 1973 and just over 29% in 1974. In this situation universities faced severe financial difficulties, which obliged the government to make special grants. The supplementary grants represented, however, only one third of the additional sum necessary to maintain the universities' recurrent grant in real terms. During the period 1972-77 the value of recurrent income per student has declined in real terms by more than 6%.

The Labour Market

A guide to the contemporary contribution of tertiary education to the labour market can be seen in the Tables 1 and 2, which show the entry of first degree and postgraduate degree holders to the labour market. The wide ranging distribution is typical not only of university but also polytechnic and college graduates and indicates the importance of the close liaison that increasingly exists between institutions of tertiary education and employers—through a developed network of careers officers, appointments, officers, counsellors and committees and also through a wide range of informal agencies. Indeed it is this contact and the understandings that have given rise to it that constitute one of the most important reforms in British tertiary education in the late 1970s.

It is now normal for employers to visit universities and colleges regularly not simply to recruit but to discuss with staff and students, issues specific to their own industry or profession and those generally relevant to the labour market. Many institutions plan courses with specific reference to the labour market, many employers plan recruitment with special reference to tertiary education. Appointments and counselling specialists, usually with intimate knowledge of the labour market, are increasing circulation throughout a student's course to advise him not only on employment opportunities but also on the detailed requirements of various kinds of work and the extent to which these relate to his needs and capacities.

All this is not to say that there is a perfect match between tertiary education and the labour market in Britain. Both employers and former students can still feel frustration and lack of commitment; not all students who wish

Table 1

TYPE OF WORK CATEGORIES OF MEN AND WOMEN HIGHER DEGREE GRADUATES IN UNITED KINGDOM UNIVERSITIES WHO ENTERED HOME EMPLOYMENT 1975-76

Higher Degrees

Higher Degrees

	General Management	*Scientific Research Design & Development*	*Environmental Planning*	*Routine Scientific Analysis & Investigation*	*Production Operation Maintenance*	*Buying, Marketing & Selling*	*Management Services*	*Financial Work*	*Legal Work*	*Information Advisory and Non-Scientific Research Work*	*Personnel Social & Medical Auxiliary Work*	*Teaching and Lecturing*	*All Others*	*Grand Total*
1. Education	11	4	—	—	—	—	6	1	—	9	25	135	5	166
2. Medicine, dentistry and health	5	86	3	17	2	2	4	—	—	7	82	51	3	262
3. Engineering and technology	30	376	83	40	109	10	62	13	—	7	7	82	3	822
4. Agriculture, forestry and veterinary Science	5	42	7	4	9	1	12	—	—	7	6	35	—	128
5. Science	45	571	16	123	31	17	131	35	4	52	26	259	12	1332
6. Social, administrative and buisness studies	74	47	10	4	28	59	60	94	23	93	183	291	11	932
7. Architecture and other professional and vocational subjects	4	8	117	—	2	—	12	6	—	81	2	8	1	241
8. Language, literature and area studies	17	—	—	1	1	7	1	7	1	22	12	190	15	275

9. Arts other than languages	18	8	—	2	—	2	—	8	—	32	16	121	11	218
1975 Total	209	1142	236	191	182	98	288	184	28	315	350	1182	62	4456
1974-75	197	1203	291	203	170	96	357	205	25	369	343	1339	67	4325
1973-74	178	1403	221	200	182	112	378	135	26	271	324	1291	133	4311
Percentage of Total MEN and WOMEN	1.2	6.6	1.4	1.1	1.1	0.6	1.7	0.9	0.2	1.8	2.1	6.8	0.4	25.7
Percentage of total MEN and WOMEN entering Home employment	4.7	25.6	5.3	4.3	4.1	2.2	6.5	3.7	0.6	7.1	8.1	26.5	1.4	100.0

Source: First Destination of university graduates 1975-76, supplement to university graduates 1976 some Details of First Destination and Employment (Table 15). Central Series Unit for Careers and Appointments Servies and the AGCAS Statistics Sub-Committee.

Table 2

TYPE OF WORK CATEGORIES OF MEN AND WOMEN GRADUATES FROM UNITED KINGDOM UNIVERSITIES WHO ENTERED HOME EMPLOYMENT 1975-76

First Degrees

	General Management	*Scientific Research Design & Development*	*Environmental Planning*	*Routine Scientific Analysis & Investigation*	*Production Operation Maintenance*	*Buying, Marketing & Selling*	*Management Services*	*Financial Work*	*Legal Work*	*Information, Advisory & Non-Scientific Research Work*	*Personnel Social & Medical Axiuliary*	*Teaching and Lecturing*	*All Others*	*Grand Total*
1. Education	8	1	—	—	—	6	2	6	—	1	12	340	4	366
2. Medicine, dentistry and health	7	36	—	55	3	8	6	5	—	3	3932	2	3	4110
3. Engineering and technology	349	1189	837	177	1291	89	153	125	3	11	22	14	10	4320
4. Agriculture, forestry and veterinary science	12	25	2	29	108	43	34	9	—	4	166	3	9	439
5. Science	359	966	37	631	286	235	995	871	18	136	135	146	133	5000
6. Social, administrative and business studies	662	41	103	19	100	460	160	1659	796	176	853	90	207	5331
7. Architecture and other professional and vocational subjects	18	3	374	2	41	14	3	10	—	31	4	2	3	505
8. Language, literature and area studies	318	3	7	5	14	222	36	289	26	180	180	90	243	1513

9. Arts other than languages	257	2	7	10	21	139	33	211	34	132	215	93	177	1331
1975 Total	1990	2255	1417	923	1864	4222	1422	3185	877	674	5330	730	793	23553
1974-75	2032	2310	1617	910	1853	823	1313	3042	749	752	5394	957	633	23335
1973-74	2006	2531	1049	1020	1543	927	1555	2991	822	833	5019	952	2437	23735
Percentage of Total MEN and WOMEN	3.5	4.0	2.5	1.6	3.3	2.1	2.5	5.6	1.5	1.2	9.6	1.4	1.4	40.3
Percentage of Total MEN and WOMEN entering Home employment	8.6	9.8	5.1	4.0	8.1	5.3	6.2	13.8	3.8	2.9	24.4	3.4	3.5	100.0

Source : Same as in Table 1. Table 18 of that publication.

to obtain employment do so. Not only are the overall economies of the labour market, like those of tertiary education, unpredictable, but also there are those who argue that "too good a fit" would diminish the essential dynamism of both education and industry. Yet it is widely agreed that in terms of job satisfaction and level of employment, students leaving tertiary education are advantaged in comparison with other would be entrants to the labour market and that this advantage is significantly due to the development of counselling, guidance and appointments services in tertiary education.

Efficiency

No attempt has been made to consider specifically the efficiency of the British system of tertiary education. This is because the system abundantly satisfies the normal criteria of efficiency employed in Europe. Almost all students take their examinations after the duration of the minimum course; the 'perpetual undergraduate' scarcely exists. Almost all students succeed in the final examinations: weaker or less motivated students are failed or 'cool-out' well before the final stages of their courses. There are, of course, areas of wastage as in any large system—unfilled courses, under-used resources and the like. But these are relatively few, and when they occur, strenuous efforts are made to minimise them.

Conclusion

In conditions of fundamental demographic, economic and technological change, it is impossible to predict or even comment in detail on the behaviour of predominantly autonomous institutions and individuals within them. Yet even though many recommendations for change, such as those of the Oakes Committee, raise fundamental questions for the administration of the public sector of tertiary education in Britain, there are no signs of a major structural or functional change in the basic pattern of the binary yet interrelated system of tertiary education in Britain that has been described in this paper. The partnership has not only survived its first decade intact; it has also displayed an increasing capacity to develop effectively a degree of flexibility, adaptability and responsiveness that augers well for an enduring and essentially diversified existence in the predictably changing future of British tertiary education.

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The Crisis of the Professoriate

PHILIP G. ALTBACH

The academic profession has experienced major change and disruption in the post World War II period.[1] Changes were related to the dramatic expansion of post-secondary education, to the student turmoil of the 1960s, to massive societal demands for curricular and other reforms in the universities, and most recently to the decline in financial support and enrolments in many countries. These factors frame this discussion of the academic profession as they have contributed to the crisis of the past several decades.[2] Further, academics and others concerned with higher education must consider the continuing impact of unprecedented change on the profession. These issues will be considered comparatively, as a broad perspective can help to provide a more detailed understanding of national realities. While there are many national differences among national university systems, there is much that can be learned from cross-national analysis.

Since World War Two, the professoriate has most often been in a defensive position. As intellectual workers dependent on the university, professors have basically reacted to external developments that produced alterations in the traditional university in most countries. It is, thus, necessary to indicate some of the more important changes in higher education in order to provide a frame for this discussion.

The overwhelming reality of higher education in most countries has been expansion. Rapid growth was triggered by economic and political changes following the two world wars. Having fought a war "to make the world safe for democracy" and a war "to end all wars", materially prosperous and highly industrialized "first world" countries had to address widespread popular expectations of a more egalitarian distribution of societal resources, both economic and political. The university was called on to participate in the creation of an egalitarian society as well as in advanced research and training. Higher education provided at one and the same time seemingly more equitable access to opportunity to win societal rewards and the well-trained and disciplined labor force necessary for full industrialization and post-industrial technology. Many university systems doubled their student enrolments in little more than a decade in the period between 1950 and 1970. An expanded university served similar functions—although on a more limited scale—in "second" and "third" world nations eager to industrialize.

Expansion had wide ranging implications. The social class base of both the student population and the professoriate broadened and changed. Substantial segments of the student body were no longer recruited from elite and professional classes. This shift meant that members of the academic community were less and less likely to share a common understanding of the university and the way it traditionally related to the wider world. Sheer increase in numbers fragmented the academic profession and vitiated the base for shared action and perspectives.

The resource base for expanded post-secondary education also changed dramatically as it grew. In the United States, private funds declined in importance as government funding for higher education greatly increased. Public expenditures dramatically increased in other countries as well. The use of public monies called for a corresponding growth in accountability. The work of the professoriate was more closely monitored, and the academic career as well as academic institutions themselves became increasingly bureaucratized. Funds for research also increased and the orientation of higher education in the United States and other industrialized nations shifted in the direction of research. As funding agencies were interested in specific results, the conditions for the award of funds were made strigent, and academics were asked to provide careful accounting for expenditures. Cleavages between those academics with access to research and those without such funding grew, and general dissatisfaction increased.

As universities became more "central" institutions, they became arenas in which general societal demands and conflicts were worked out.[3] The public and government demanded accountability, students demanded relevance, minority groups demanded compensatory treatment and the society attempted to use higher education as a means of solving social ills. These conflicts, and other specific issues such as the Vietnam war, became part of university politics, often part of the curriculum and always part of the university's relations with the wider society.[4] As a corporate body, the professoriate seldom took stands on these issues and often attempted to ignore their implications.

Many academic analysts and a significant part of the profession in many nations viewed the post-war crisis with considerable dismay and compared the contemporary situation to a somewhat mythic "Golden Age" when autonomy was entrenched, academic values respected, and the profession itself laden with prestige but somewhat removed from the societal mainstream. The historical referent for the Golden Age myth in the United States are the pre-war elite, private Eastern graduate universities where small groups of scholars taught the sons and daughters of a political and economic elite, shared research and scholarly interests and, on the national scene, knew almost anyone who was working in their respective fields. They were part of an international academic system, familiar with their compeers in Britain, France and Germany. Productive researchers, either tenured or confident of a good place in the academic system, they generally stayed away from oppositional politics, either to the right or left of center. It was this academic elite which benefited first from the massive research funds of the post-war period. When the academic system began to expand almost beyond recognition, the elite bemoaned the decline of the 'community of scholars'.

While the "Golden Age" recalled in such discussions was probably more revered myth than historical reality, at least it reflects the norms and values of a small but highly significant segment of the American academic system. Much of the current debate on the state of the academic profession is framed in terms of these values. Academics, particularly at prestigious institutions in the industrialized nations, look back to this tradition and compare the current situation to it. This article will discuss some of the elements of the traditional view of the university and examine the current status of the academic profession in this context. When we consider the traditional norms and values of the profession in this article, we do so with the understanding that these perceptions are at least in part a collective myth which has nevertheless shaped our image of academe. These traditional norms protect academic elites, but they have also shaped the collective historical consciousness of the university. It is questionable whether the traditional values are appropriate for mass higher educational systems, or whether appropriate or not, that the values can survive in the pressures of contemporary higher education. It is incumbent on the academic profession to think seriously about the meaning of these changes, and important for those concerned with the future of higher education to understand the rapidly changing academic scene.[5]

We will discuss some of the key changes which have cross-national relevance, and which have most directly affected the academic profession. These reflections are necessarily quite general in nature and do not reflect the entire range of concerns. They indicate a composite of national conditions rather than a thoroughgoing analysis of a single country.

The International Academic System

In academic mythology, knowledge is international. The only qualification for participating in a world-wide intellectual network is a commitment to the quest for truth. However, some universities and academic systems are more important than others. Since World War II, the speed of modern communications, the concentration of research efforts, and the mobility of students and staff has made an international academic hierarchy an important reality. The enormous influence of the "central" academic systems such as those in the United States, Britain and France and the corresponding authority of the professoriate in these countries shapes the international knowledge structure. Most of the world's research is done by academics in the "central" university systems; the major publishers and journals are located in these countries.[6] The primary languages of academic discourse are English and French. Increasingly, without access to publications in the major scholarly languages and without knowledge of these languages, it is impossible to follow current developments. Universities throughout the world look to the major metropolitan institutions for leadership, and often follow curricular and other practices of these universities. Academics, in the Third World especially, are often trained in the metropolitan institutions and carry back the ethos, orientations, and practices of the universities in which they have been trained. Further, the 'imbalance' in academic power contributes to the brain drain as academics gravitate to the metropolitan nations and often remain there. But dependency is not simply a matter of a low level of economic development and poverty; even such countries as Canada, Kuwait and the Netherlands are all, in different ways, dependent on major academic power centers.[7]

There has emerged in recent years a global academic stratification system with the major industrialized nations at the top of the system and with the prestigious research-oriented institutions within these countries at the pinnacle. The rest of the world occupies positions at lower reaches of the system, with the Third World nations at the bottom of the ladder. Currently, Third World countries are trying to change their position in the international system. In international forums, the press and the media, they are demanding a shift in the knowledge structure—especially technological knowledge—that would allow them to be producers rather than consumers of knowledge. Western academics and their governments have not yet shown themselves responsive to such demands. Central university systems presently constitute an international cartel of technical knowledge, and world redistribution would significantly alter their material circumstances. While academics at the center deny knowledge is a commodity and speak of it as unfettered by national boundaries, in reality, the international academic system, in a perverse way, links the academic profession in a web of inequality.

Academics and Research

Traditionally, research and teaching have been viewed as mutually reinforcing, the two together constituting the scholarly orientation to which academics aspire. However, as advanced knowledge has become more central to modern industrial society, research is the function best rewarded. Indeed, the American graduate university, in its emphasis on the generation of new knowledge, has become a world model. While not all universities or colleges focus mainly on research, or use research criteria for academic advancement, the graduate-oriented model is the international standard of prestige. Institutions as well as individual scholars aspire to the high status roles of graduate teaching and research. While most academics have as their main responsibility the teaching of undergraduate students, the growing research emphasis has upset the balance of the profession and has disconcerted many academics.

In the past, researchers have always commanded greater prestige and generally higher salaries than academics who concentrated on teaching, especially at the undergraduate level. But all academics are increasingly encouraged to publish in scholarly journals and to write books. Merely teaching is no longer a choice at many universities. As competition for scarce tenured positions becomes more fierce, teaching and research are minimal requirements. However, there is no corresponding reduction in teaching load or increase in compensation. The situation is further complicated by the fact that most academics throughout the world publish very little. Thus, performance expectations are up while rewards remain the same or even decline due to worldwide inflation. Relatively few academic systems—the British, dominated by the ethos of Oxford and Cambridge is among the few exceptions—have withstood these pressures.

The point here is not that research, graduate training and scholarly publication are detrimental. Indeed, these elements may be crucial to maintaining sufficient support for higher education and are intrinsically valuable. However, expecting research and publication from all faculty members in most universities and colleges does not fit either current reality or traditional norms, or perhaps even the needs of the modern mass higher education system.

Decline of Community

The traditional ideal of the community of scholars was, to a considerable extent, part of folklore rather than reality. Nevertheless, shared concepts of the university, common academic practices, and similar aspects of academic life have lost much of their meaning in recent years. The profession, in many countries, has become increasingly divided by disciplinary specializations, orientations to scholarship, and even by politics, ethnic or class factors. The rise of trade unions among academics in the United States, Britain, France, India, and other countries is perhaps an indication of the decline of the sense of community. There are a number of complex factors which have contributed to this situation.

Size. Expansion has meant that universities commonly have student populations of 20,000 or more and academic staffs of more than 1,000. A sense of community among so large a group of individuals is very difficult.

Class and gender. As the academic profession has expanded numerically in many countries, it has become less homogeneous. Traditionally, academics came from upper middle class or elite families and were predominantly male. While there are still relatively few professors from working class backgrounds, the profession has moved from its very narrow class base. Further, racial and ethnic minorities and women have moved increasingly into professional roles and while they constitute only a small minority in most countries, they are a new part of the academic equation.

Diversity of Training: As the professoriate expanded, the monopoly of a few prestigious universities in the training of doctoral candidates has been weakened, and many newer and less prestigious universities now award doctoral degrees. The norms and values of traditional academe are often not as strongly entrenched in these newer universities, and thus the socialization of younger academics whom they graduate may not be as strong.

Generational Anomoly: Because of the expansion of the past two decades, there is an unusually large number of relatively young academics now moving through the system. Because of stabilizing enrolments, there are relatively few new recruits entering the system. Thus, the profession will be domination by the generation of professors of the 1960s for some time to come. Further, many of these younger academics experienced the student movements of the 1960s and have opinions concerning higher education, politics, and life-style issues which may differ from their older colleagues. It is difficult to delineate the extent and the implications of these differences in a cross-national context, but it is clear that there is, at least potentially, substantial generational cleavages within the academic profession and also that the age structure of the profession in many countries will be skewed for a decade or more.

Bifurcation: As the curriculum has expanded and universities throughout the world took on new functions, the traditional core of arts and sciences fields now constitute only a small part of the total university. Applied fields, from agriculture to business and engineering have little in common with the "core" disciplines. Faculty in these fields often have different values, orientations and sometimes differing views of the university than professors in the traditional fields.

Tenure and Unions: For many years, academics resisted the very notion of unionization despite the fact that they were institutionally-dependent intellectuals. Unionization was viewed as weakening professional status. But a trend toward unionism among professors is now evident in many countries. In the United States, Britain, and other countries, recent declines in enrolment and shifting foci of student interest have brought the issues of job security and retrenchment to the forefront. Academics are clearly worried about their professional status, their relatively prestigious positions in society, their roles and autonomy within universities, and in some instances their jobs. The traditional concept of tenure (which differs from country to country and is not clearly defined in most places) becomes less meaningful as the pressure on universities grows.

Unions have become an important part of the academic landscape in a number of countries, and this movement has had varying impacts. In Britain, where the Association of University Teachers has been active for several decades, the existence of a union which speaks informally for the academic profession has not diminished professional standing. In the United States, it has been argued by some that the union movement is detrimental to professionalism. In France, the rise of professional unions has gone along with the radicalization of a segment of the profession and with the politicization of the Sixties. The Indian academic union movement has reflected job insecurity and low salaries among many faculty members. The union movement has become increasingly widespread but it has different meanings in different nations. Without question, it reflects a growing insecurity among academics, and it also reflects increased political consciousness and perhaps a decline in professional orientation.

The issue of retrenchment has been a contentious one in many nations, and has affected the morale and status of the academic profession. It also relates to the meaning of tenure and academic freedom in the modern university. American universities have, in a sense, been among the least humane in their handling of the problems of declining enrolments and shifts in student interest. Some universities have been willing to fire faculty members regardless of commitment to tenure or continuing appointments. While there are no accurate statistics concerning the total numbers fired, the figures is not insignificant. Other university systems have been, in almost all cases, less willing to break with traditions or with commitments to permanent appointment. Britain, faced with declining enrolments in teacher training institutions, severe inflation, and general economic difficulties, nevertheless fired few education professors. Individuals were reassigned, were offered retirement, or other arrangements were generally made. Very few, if any, actually lost their jobs. In West Germany, academics have status as civil servants and are virtually immune from loss of their academic jobs. Even in India, a very poor country with an oversupply of academic staff, very few college or university teachers have been fired despite minimal procedural guarantees.

Academic systems have handled the problems of decline, job security, and the general stresses of the current "steady state" differently and it is fair to say that the American approach has been one of the most tension-producing for the profession. The nature of tenure and job security, protection for academic freedom, and the general processes of academic advancement in a changing and deteriorating job market has major implications for the academic profession, for morale, and for a sense of professional commitment. The union movement, currently gaining strength in many nations, is one response to this crisis.

The Politics of Professors

The Illusion of Change: It has been claimed that higher education has become infused with ideological politics in recent years and that the vaunted traditions of non-partisan academic institutions have been shattered by the turmoil of the 1960s. This is only partly correct.[8] The student movements and associated commotions of the Sixties stimulated political controversy in the universities; academics as individuals and occasionally as corporate groups have taken positions on a range of societal issues.

But it is an exaggeration to claim that professional politics is a phenomenon of the Sixties or that universities have been free from political pressures in earlier periods. Academics themselves have seldom protested against the societal *status quo* and, with the exception of strong dissident traditions in Latin America, universities have rarely been militant opponents of established political regimes. Indeed, university and state authorities have often moved against dissenting academics or, as in Germany, barred academic positions to leftists for long periods of German history. Even now, political criteria have been established by state authorities for appointments to academic positions in West Germany. In so far as universities are state institutions, they necessarily support mainstream politics. The neutrality of the university is equated with the political center.

However, professorial politics has become more visible and perhaps more widespread in recent years, due in considerable part to the partial 'radicalization' of the professoriate and to the increasing visibility and importance of universities. Academics in some countries have supported radical movements, and universities have become centers of political dissent. The largely accepted notion of institutional neutrality has been called into question during periods of intense political strife, and in some countries has been violated.

It is likely that the radicalism of the Sixties was, in most countries, an aberration rather than a continuing academic trend, since the more recent period has seen a marked diminution of political consciousness and activism in the universities, among both students and faculty. In a sense, the 'normal' politics of the academic profession, which is by and large supportive of established institutions, has reasserted itself. But there are indications that a growing number of academics, in the industrialized nations at least, have moved in a leftward direction and the long term implications for the academic profession and for the universities of an articulate professoriate which holds dissenting views on many issues remains unclear.

Reform: There is a spectre haunting the academic profession, and it is university reform.[9] Despite the increasingly liberal opinons of academics on social issues, the profession has by and large opposed efforts to change the university. The reasons for this opposition are complex and, as Edward Shils has pointed out, academics have opposed many proposals because the reform ideas have themselves been ill advised.[10] Academics are, in a sense, the conscience of the university, and tend to defend traditions whether or not these traditions serve the best long-term interests of the university. On the one hand, the conservatism of the professoriate may, in this way, protect the university from precipitious and ill-advised change. On the other hand, it may also insulate academic systems from desirable change. University reform is not always desirable, just as change for the sake of change may be unwise. But the role of the academic profession in the reform process has, almost without exception, been a negative one and it is worth examining some of the salient factors.

University reform in recent years has meant a diminution of the power of the professoriate. Prior to the 1960s, the academic profession gained in institutional power and societal prestige as a result of university growth and changes in higher education. More recent changes have negatively affected the professoriate, and particularly the influential senior faculty in the prestigious universities. Moves to expand participation in academic decision making, and to involve students in some countries might weaken the authority of the senior staff. *Drittelipar itat* (student and staff voting on governance) in West Germany, expanded participation in France and Holland, and the U68 reforms in Sweden have all weakened professorial power and all have been opposed by the profession.[11] Most curricular reforms have been opposed by the faculty because they have tended to weaken the traditional orientation of the curriculum and to weaken the faculty's control over the educational experiences of the student.

Very few reform proposals have emanated from the professoriate. Academics have, in general tried to protect the *status quo* rather than attempting to change higher education. It has, in general, been in their interest to maintain established practices and patterns of governance. Reform proposals have come from students, administrators, government authorities and official commissions. They have often been forced on a reluctant academic profession. Interestingly, one of the very few professionally-inspired reform efforts are current American proposals to revive general education in the undergraduate curriculum. In a sense, general education reestablishes professorial control over the curriculum which, in America has been put increasingly in the hands of the students through the 'elective' system. The general education reform effort fits neatly into the professorial orientation indicated in this discussion.

Professors have resisted reforms for a variety of reasons. They are reluctant to see changes that will diminish their power, prestige or authority. Academic institutions are typically run by committee structures, and these committees are often dominated by the senior staff. Governance by committee is cumbersome at best and proposals are often compromised by a multi-level governance structure. Thus, innate conservatism, self-interest, and historical consciousness all have mitigated against successful internal reform.

In academic systems where reforms have been imposed from the outside, professors have often been able to successfully oppose their implementation. In West Germany senior professors successfully prevented full implemention of the governance reforms through court action. In France, structural reforms have been less than fully successful, in part because of opposition from academics. Without the willing cooperation of the academics, successful university reform is almost impossible.

Autonomy and Accountability: The academic profession has historically been protected within the universities by a complex set of legal and traditional mechanisms which permit considerable autonomy. Academics work within a large bureaucratic structure, the university, but at the same time they have many of the characteristics of the independent professions. They have considerable autonomy in controlling working conditions and time, and can collectively make key decisions concerning who is permitted to enter the profession, on the curriculum, degree requirements and the like. This substantial degree of autonomy has, in recent years, been under considerable attack. Public authorities, who provide the bulk of increasing university budgets, had demanded accountability for the expenditure of funds. Governments have also demanded that academic institutions be responsive to societal needs, that 'relevant' curricula be offered, that socially useful research be conducted, and that universities generally provide services for the funds they receive.

In most countries, the academic profession has been ambivalent about the almost inevitable conflict between autonomy and accountability. Professors have generally accepted the increased funds which have accompanied expansion, and have been willing to perform research for governmental and other agencies. As they have become more oriented toward research, the undergraduate curriculum in many countries has been somewhat neglected. Yet academics have resented the increasing bureaucratization of universities and have particularly opposed demands for accountability with regard to their own work.

Opposition to accountability and bureaucracy expresses itself in many ways. The trade union movement among professors is one of the primary ways in which the profession has sought to protect its privileges. Many would argue, however, that unionism, which is a growing characteristic not only of the American scene, but also in India, Britain, France, Japan, and other countries contributes to the declining professionalism of academic work. Academics have also tried simply to ignore governmental and university authorities placed over them and have had surprisingly good luck with this tactic. Very few academics have been removed from their jobs for infractions of rules, and the bureaucratic presence, while increasingly prevalent in higher education, has yet to fully dominate academic life. It is, nevertheless, clear that the highly complex issues involved with autonomy and accounability affect the academic profession and that despite widespread opposition among the professoriate to increased bureaucracy, this is probably an inevitable current which will increasingly intrude on the lives of academics.

The Academic Stratification System and Its Impact

Having discussed some of the key issues affecting the academic professions in recent years, it is necessary to differentiate the profession, since there is not only international stratification but major divisions within national university systems. We have argued that the international academic system, made more visible through improved communications, is characterized by inequalities and by the domination of the 'central' universities. In much the same way, national academic systems are similarly burdened by hierarchies and inequalities. Indeed, these differences have contributed to the sense of breakdown in the academic community. As higher education systems in most countries have expanded and have typically added new kinds of institutions, a class system of higher education has emerged. This system not only affects students but also has definite implications for the professoriate as well. In the United States, for example, the prestigious graduate-oriented universities are clearly at the top of the system, and dominate the norms and values of the rest of American higher education. David Riesman identified this trend toward conformity in American higher education many years ago.[12] The functions of faculty members in the community colleges and four-year undergraduate institutions differ substantially from those in university centers. As Howard London points out, the community college teacher has considerable ambivalence concerning academic roles and the place of the community college at the bottom of the prestige hierarchy.[13] In addition, academics in the various segments of the system have somewhat different functions and are differentially remunerated. Not surprisingly, community college teachers are paid less and teach more than their compeers in four-year institutions. They are not generally expected to publish in scholarly journals, and seldom obtain research grants. Clearly, this academic hierarchy in the United States works against a unified community.

Other countries have also developed hierarchial systems in recent years as higher education has expanded and the traditional universities have been unable to absorb the increase. In some nations, there have been planned efforts to differentiate academic institutions by function. In others, previously non-university post-secondary institutions have simply been added to the university system. In West Germany, some *technische hochschulen* (technical higher schools) have been upgraded to university status. In many nations, new universities have been established which are significantly below established institutions in prestige. Even in Britain, where efforts have been made to equalize the quality of instruction, Oxford and Cambridge stand above the Redbrick institutions which in turn have higher prestige than the newer "Plateglass" universities. Similar situations exist in France, Japan, India and much of Latin America.

There is now a national and international system of academic stratification which has divided the profession and created inequalities, tensions, and strains. Just as the metropolitan institutions in the industrialized nations dominate universities in the Third World, and their professorial staffs have high prestige and essentially control the flow of knowledge, the direction of research, and often the curriculum, so too the major universities in a particular nation dominate other institutions within their own milieu[14]. While these relationships of inequality may be inevitable, they nevertheless pose serious problems for the academic profession which cannot be wished away by harking back to traditional values.

Within universities, there are also major divisions of power, status, roles and prestige. Traditionally, the full professors completely dominated universities in Europe and Japan, and had most power in North America.[15] While the reforms of the 1960s and recent expansion has weakened the senior professors, the academic hierarchy still exists although junior staff in general have more job security and often a greater role in decision making. Nevertheless, the internal hierarchy remains important in determining the academic style of the university and in shaping the working conditions of the academic profession.

Conclusion

As student radicals used to say, "if you're not part of the solution, then you are part of the problem". The academic profession has found itself in the ambivalent situation of having benefitted from aspects of the post-war expansion in terms of increased salaries, greater prestige and improved working conditions in most countries. But the profession has, by and large, been content to attempt, with decreasing success, to maintain the *status quo*. The professoriate has struggled for the ideal of the traditional university, and there is much in this ideal that is worth preserving. The crises of the current period are, however, immense and probably preclude a maintenance of the *status quo*.

The academic profession remains an important group in most societies. Despite accountability, bureaucracy, and in some nations political controls, the academic profession remains at the very heart of the university. If the teaching staff is unqualified or demoralized, the quality of instruction at a university cannot be high. And if academics are not interested in research or not rewarded for the creation of new knowledge, research productivity will inevitably be low and scientific and technological development slowed. The attitudes of academics also matter, not only because they provide instruction and sometimes role models for the next generation of society's leaders, but also because academics contribute to the national debate through their writing and occasionally through their participation in government.[16] The importance of the academic profession is unquestionable, but it is also unrecognized by many, including government officials and even some university administrators, in the current stress on accountability and the balancing of budgets. It is even more surprising that there has been very little research concerning the academic profession, either comparatively or in most countries.

The professoriate has not done much to create solutions to the manifest problems of the universities. Professors were willing to accept the funds that were provided and did not worry much about the unanticipated consequences of this largesse and about expansion generally. And when reforms were proposed, the academics by and large took a negative stance and offered few creative alternatives. The problem, therefore, is not simply one of external impact on higher education but it is in part a result of ostrich-like behavior by the profession.

This article has been an exercise in comparative consciousness raising. It has pointed out, in comparative context, some of the key elements of the crisis of the professoriate. While there are many differences among university systems, it is useful to reflect comparatively on the problems which face the academic profession. The crisis is world-wide, and because of the similar challenges—of expansion, fiscal constraints public criticism, curricular malaise, and a declining sense of professionalism—it is certainly worthwhile to think in comparative terms about the problems of the professoriate in a period of crisis.

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Reorientation in Teaching, Learning and Evaluation

RAIS AHMAD

The maintenance of academic standards should be the prime concern of educational institutions but it is seldom realized that this is a very complex problem. One hears light arguments that "standards" have fallen in the last few decades because High School pass students could then write better English than the graduates of today; or that "standards", at least in many subjects, have risen because the courses are more uptodate and frontiers of knowledge are approached at least in optional master's level courses. The difficulty is that the definition of standards is elusive—and judgment of quality of promise and performance is always very difficult.

By way of establishing some kind of a measure of standards the number of working days in a year has been in use for some time but not only are days wasted in admission, preparation leave and examinations often included, but also one cannot be sure now if teaching takes place on all the days the universities are formally open in view of the tremors of student, teacher or karamchari agitations. Value of equipment or books possessed by an institution would also be unreliable indicators, because one would not know if the equipment was in working order or actually utilized, and whether or not books were actually read, or the nature of the teaching and examination made it necessary to read books at all. Teacher student ratio could be perhaps a more reliable indicator of the efficiency of the teaching process but it is also a function of how well teachers discharge their duties, and furthermore its reliability as an indicator of standards depends on all the other factors mentioned above.

Traditionally, syllabi of courses have been considered as sure indicators of standards achieved. But many of us, experienced teachers, know that ambitious syllabi are no guarantee of the grasp and understanding on the part of the students. In fact more often than nought these syllabi cannot be covered in the time provided. I was once taken aback and somewhat ashamed when a distinguished Professor of London University told me that my courses were more advanced than his and that his staff was, perhaps on the average, better equipped to deal with high level courses.

A corollary of the courses are the corresponding examinations. It is sometimes thought that if the pass percentage is low, or if fewer students get a first or high second division, the standards are high. In other words the more inefficient the process, the better is the product. Question papers of a high standard, comparable with leading foreign universities are also no guide when stereotyping of questions and crammed answers are taken into considerations. In any case, the ordinary essay type of examinations at the end of a course are known to provide a rough clue only about intelligence and memory of the candidate and hardly any information about the examinee's creative, organizational and other abilities of the affective domain which are extremely important even for scholarly and intellectual performance. All of us who have had the occasion to interview young Ph.D's for jobs will probably agree with the finding that a great majority of candidates are able to answer a few questions about their researches, but they are unable to answer or even apply their minds to basic concepts in their own disciplines, and of course, they draw a blank or give trite replies to questions of general interest in sociology, politics, economics or aspects of culture. We cannot but conclude that the specializations are too narrow, memories too short, and broader interests too rare.

When we consider the recently emphasized facets of relevant education, social concern and extension work, how indeed are we to assess performance, or to speak of or compare standards. We are, therefore, caught in rather awkward contradictions when we concern ourselves with academic standards in a traditional way. Pursuit of standards in this framework leads us not to raising of standards but to strengthening of traditional styles, and a general conservatism with regard to educational change. In this context one can say that creating a new academic air and a new educational climate should be the focal concern rather than worrying about "standards" which are illusory.

Revamping of System

The crux of the matter is that we must aim at developing the student intellectually, to cultivate his intrinsic potentials, to give him opportunities to grow, to make him more alive to the society and environment, more inclined to work towards a solution of the larger problems that beset us. When we say this we are talking about the "quality", of course content (not merely the intensity or "depth" of knowledge in the few elected disciplines) and about methods of "teaching". The inverted commas on teaching imply that this notion itself is outmoded but we continue to use the term. It is in fact learning that should be aimed at, and the process of teaching should be understood as a form of interaction to bring about learning with the help of a teacher and the materials or situations which can be provided in (what were once called) the seats of learning. Naturally this interactive process will require new methods of evaluation of the benefit a student draws from it in the course of a semester, a year or whatever is the duration for the award of a degree.

In a nutshell, it is a question of a revolution in the so called methods of teaching and examination and social interaction rather than that of some intangible standards of education that have to be maintained—because these standards are not being maintained in any case. Brilliant scientists or intellectuals produced by our educational system do not really owe their achievement to the system; their achievement is in spite of the system. The methods we are thinking of are new to us but they are not new to the universities in most of the developed countries. The essence of these methods is not to treat students as passive recepticles of factual knowledge, but through tutorials, seminars, term papers, projects and field work etc., to make them think for themselves, to arrive at their own views, ideas, concepts and attitudes by first hand contact with books, reality of situations, fellow students and teachers. Formulation of thoughts and creative expression on the part of the student are to be at a premium, rather than repeating what exactly the teacher says or wants in answer to typical questions. If taking up this challenge requires cutting down on content, then it should be done, without raising the bugbear of standards.

Obviously, such an approach to education at the college and university level requires the teachers to equip themselves anew. The know-how of interactive teaching and corresponding examinations does not quite exist and it can only be created by the personal effort of teachers who are convinced that they alone can transform our education from the stranglehold of colonial tradition. Maintenance of standards by the universities or an inter-university system such as the UGC would require in depth monitoring of what exactly is happening in the classrooms and laboratories across the country—it is the quality of interaction which has to be judged in the large and simple statistical devices will provide the answers.

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Rationalising Communication Strategy in College Classes

V. SUBRAMANIAM

Teaching strategies need revamping because our present methods suit only development of "school knowledge." By 'school knowledge' is meant the knowledge which some one else presents to us. We partly grasp it, enough to answer the teachers' questions, to do exercises set for home task and to know just enough to answer the examination questions and so it remains some one's knowledge and not ours. Students who have only "school knowledge" do not acquire enough skills to tackle life-like situations and therefore feel panicky when they have to function in a real situation. The student fails to come to grip with the actual process of communication because the learning behaviour had temporarily undergone modification and it was not sufficiently practised so as to become a permanent behaviour. Most teachers will agree that though a great deal of learning in school begins as school knowledge, it is not much use for anything (except perhaps examinations) until it becomes part of the learner's action knowledge.[1] We educate students in the colleges in order to change their behaviour by changing their view of the world. We want to change the way they perceive the world they live in, not so that they will carry out our limited academic purposes, but so that they can formulate their own process of action and estimate their value. The central problem of teaching strategy is how to put adult knowledge at the learner's disposal so that it does not become a strait-jacket. How can our learners learn to use for their own ends the knowledge which adults present to the learners?

"Piaget[2] used the expression 'spontaneous constructions' to refer to the learner's existing knowledge, and contrasts this with the 'non-spontaneous' constructions presented by teachers. All knowledge has to be actively incorporated into the way he interprets the world, or it will be of little value." This is why the distinction between 'school' and 'action knowledge' is significant.

School Knowledge and Action Knowledge

In the three decades of post-independent era educational policies and educational trends have been subjected to several changes. But teaching strategy has undergone very little change because it has been found most convenient by the teachers and students to stick to the traditional style of lecturing and learners' passive listening. Every textbook is gone through paragraph by paragraph by the teacher who reads the text aloud (often) in a sing-song rhythm) and thereby lulls his audience to sleep. The whole process of 'education' seems to have become a single channel broadcast system wherein very little of planned communication takes place. This was the approach during the earlier part of the century. The climate of the classroom was very authoritarian and continues to be so most of the time; we give the learner no freedom or choice to learn. This leads to a cold war atmosphere and quite often students resort to other methods of showing their frustration. In the context of internal evaluation, semesterisation and developing communication skills for later life it is essential to revamp our techniques of teaching particularly in the undergraduate classes.

Let us analyse various patterns of communication adopted by Assistant Professors and Lecturers or Professors in their classrooms. There are as many as 60 to 80 students in the classroom as the period commences. The lecturer arrives, if he is in a good mood that morning, very punctually. The attendance is taken---sometimes by calling out the names and sometimes by calling out the roll numbers. There is no individual attention given to learners or to their individual learning outcome/needs. After finishing the ritual of attendance, the teacher begins the text or work. If it is a text-based lecture the teacher introduces the author, explicates the text and paraphrases it for the benefit of the learners. This is silently tolerated by the students for sometime because no action—not even systematic notetaking or marginalia-writing is expected of the students. It is merely a case of passive listening that is expected of the students. To establish authority occasionally a few questions are asked and these are half-heartedly received by the students who do not wish to be disturbed in any manner. Therefore there is no sicentific way of ensuring that what has been communicated has been satisfactorily grasped and decoded. Absorption of the lecture becomes a long drawn-out process, which no one seems to bother about. There is no 'Backwash' effect which could measure the degree of communication that could have taken place between the 'speaker' and listener. There are no other suitable strategies devised to achieve this purpose.

There is yet another pattern of communication. According to this style of functioning the teacher would begin the lecture and for the next 40 to 50 minutes go on undisturbed. He or she would be listened to with wrapt attention because of the "words of learned length and thundering sound" and no one would have really understood or absorbed anything that would have been said during the one hour of torrent of words.

Ideally speaking, there should be a healthy compromise between the two extremes. Our lecturers should explore and rationalise the college-level methodology in the subject so that communication takes place most effectively for the purpose for which it is intended.

A Model of Communication and Learning

Every classroom has its way of going about lecturing or teaching. Although lecturers do not like being told so, the teaching styles are surprisingly consistent from one classroom to another. They include very complex patterns of expectation about who says what to whom and when. The learners should not be merely passive recipients. In many classrooms they learn ways of making new meanings. At times there is even the strange coincidence of saying one thing and meaning another. The teacher of a curriulum should adopt the proper communication system of a classroom. This kind of social learning has recently been much discussed in certain learning systems under the name of the "implicit" or "hidden curriculum." It is the curriculum in the sense that it is undoubtedly part of what students have to learn. Just as much part of curriculum as textbooks, learning apparatus or syllabus content, the implicit "hidden curriculum" is necessary for the understanding of the subject. Even in the most authoritarian school there are learners who find opportunities to elude the pressures to conform. As we have observed time and again there may be even a tacit agreement between teachers and pupils to subvert the expectations of the "Board of Studies" or the curriculum and their objectives.

It is necessary for our teachers to realise that the hidden curriculum is as much part of the curriculum as is the manifest curriculum which is set out in the syllabuses and textbooks. In order to join in later life of the school each learner must learn to adopt the expected behaviour. This may seem to be a move away from the communication system of the classroom to something else. But that is not true. These two are not identical. A teacher should be able to set up a system within the four walls of his classroom by which the hidden curriculum of the syllabus may also be clearly brought out.

Desirable Strategies

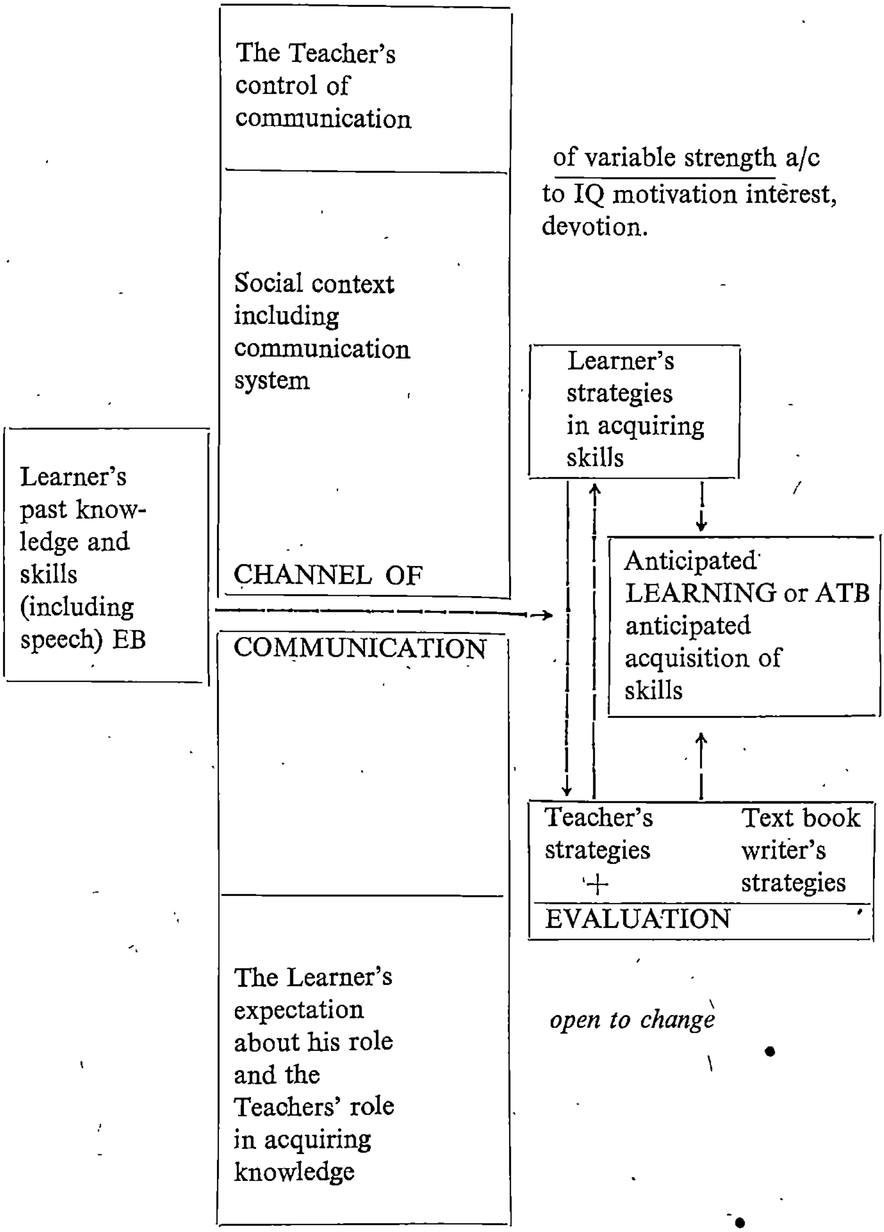
Psychological studies[3] have revealed an insight into the basic principles of learning and retention. These studies suggest that learners will achieve more from the underlying principles in situations where

(i) the students themselves rehearse aloud the demands of the task they are facing,

(ii) the students themselves are motivated to put into words what they are doing with the data and with what purpose, and

(iii) when the students are repeatedly compelled to use their own initiative to seek answers rather than repeat stock answers to familiar and "expected' questions through tackling unseen passages.

Let us now look at the relationship of learning to curriculum:


The Teacher's control of communication
of variable strength a/c to IQ motivation interest, devotion.
Social context including communication system
Learner's past knowledge and skills (including speech) EB
CHANNEL OF
COMMUNICATION
Learner's strategies in acquiring skills
Anticipated LEARNING or ATB anticipated acquisition of skills
Teacher's strategies
+
Text book writer's strategies
EVALUATION
open to change
The Learner's expectation about his role and the Teachers' role in acquiring knowledge

These types of learning tasks would compel the students to decide on what principles the data presented in a new unforeseen, unrehearsed situation have been selected and presented by the author. The learner should be helped to acquire necessary skills and information which would help him to meet his later needs in life. The actual later life needs of the learners should be carefully examined and the tasks of the classrooms should be carefully co-related with those needs. It is only such a strategy that can help bring about meaningful and useful learning. When the teacher's purposes are as arbitrary as they sometimes appear the learner's subordination to them is potentially alienating.

Developing Understanding Through Judgement

Simon and Boyer[4] in their research for better schools "Mirrors for Behaviour" present the following analysis of classroom communication while dealing with the affective domain of communication:

Understanding strategy	Judging Strategy
Accepts idea	Positive evaluation ('good')
Clarifies understanding	Negative evaluation ('wrong')
Reflects or paraphrases ideas	Counter proposals, suggestions
Expands on someone else's idea	Implies judgements, (should, should never, always, everybody ought to)

These categories describe whether a teacher is encouraging his learners to clarify, expand, think about his ideas or alternatively leaves the understanding to his students and merely demands an evidence of judgement.

Let us have an illustration from English Prose and Poetry at this state. While the "Understanding" strategy places responsibility in the teachers' hands, reinforcing the teacher's interpretation by student-response, the "Judging" strategy demands not only understanding on the part of students but also demands the responsibility in the learner's response. An irresponsible learner would be found out straightway without waiting for the end of the year, and he could be identified for "warning for poor progress' or "rewarding for his good response and judgment."

Then the teacher/learner roles may be summed up as follows:[5]

Strategy basis Predominant Teaching role	Learner's Role in Communication	Form of classroom Communication
Understanding (Asking and replying questions) Lecturing	Listening, Notetaking, responding	Final draft: Limited scope
Judging-strategy (presenting stimulation)	T: Presenting/ withdrawing L: Learning/ Sharing views/ responses	Exploratory Sharing Discussing open ended

Process of 'Transmission' and 'Interpretation'

The methods of communication are as vital as the selection of content. The methods may be listed under the categories of transmission and interpretation.

TRANSMISSION STRATEGY	AIMS		INTERPRETATION STRATEGY
Recording data acquisition of information Transmitting knowledge	Purely examination purpose	Developing personality	Cognitive development Personal development
Production Task-execution	Developing an awareness	Developing awareness to form values	Context of situation developing proper attitude/value
Assessment follow-up actions correction	Developing responses	Developing personal reactions	Responding to or commenting upon given passages relating to follow-up work

While subjectwise it may be possible to adopt the approximate communication strategy, generally the teachers of biology and physics tend to opt for transmission strategy while teachers of languages, domestic science, population studies prefer to adopt interpretation approach. Teachers of history, geography and commerce may fall within the two extremes. Most English teachers in our Universities do not believe themselves to hold a unique body of knowledge which is out of their learner's reach and so see themselves as helping their students to extend and refine their knowledge. In the Indian context, during the past 2/3 decades the syllabus at the undergraduates level has become more and more skills-oriented and less and less classical or humanistic in approach. This needs further refining in the years to come at the undergraduate level. If a teacher fails to grasp the significance of these curricular reforms he would defeat the purpose of the 'hidden curriculum' and communication of the desirable objectives will proportionately suffer.

Causes for Failure in Communication

The following are some of the general causes contributing towards failure or imperfection in desirable communication: (1) Linguistic Ambiguity "connotation" and "sense", (2) Noise in channel, (3) Confusion in mind of speaker/listener, (4) Psychological factors such as distraction, worry, (5) Inappropriate code (Bernstein's concept of 'restricted code vs 'elaborate code'), and (6) "Knowledge-gap" and "Language ability".

Responsibilities

The following roles are essential:

University/College	*Teacher*	*Learner*
1. A realistic syllabus based on students' needs	1. Planned Teacher Talk (Flanders: 'Two-thirds rule') avoiding lecturing all the time	1. Note-taking 2. Note making
2. Streaming as a method of teaching		3. Willing to participate in the learning process through action and not thro' passive listening
3. Make the purposefulness of the curriculum clear to all concerned	2. Task attention thro' mastery of facts 3. Content coverage	
4. Evaluation through scientific and objective means	4. Practice for mastery (egs.) 5. Accepting feeling	4. To do oral work as seriously as written work throughout the year
	6. Control of class through a coolheaded approach	5. Think, read and deliberate individually and in groups
	7. Through group work and interaction	6. Through developing reference skills (Library work)

From Curriculum Design to Communication Strategy

It is more than a mere truism to say that a teacher is always a student. Pre-service training and frequent in-service training are most essential needs of a good teacher. Indeed a number of pedagogic experts now feel the development of in-service rather than initial training as being of more fundamental importance in the creation and development of new teacher roles. Young teachers should believe in and practise the new principles suggested to them by pedagogic experts.

Teaching must change as the goals and objectives of education change. The new +3 level restructured courses will aim at meeting the needs of individual students, relevant curriculum, democratisation of education, greater emphasis on inquiry and creativity. If these should be possible, trained and experienced teachers should provide academic leadership. While the teachers could choose their own methods and strategies of communication appropriate to their local needs, they should have basic faith in the curriculum designed and materials selected by their University and College.

Conclusion

Teacher educators and teacher trainers should not merely be obsessed with the past and present. The growing number of educated unemployed, the first deterioration of standards in our country and the inadequacies of the present communication strategies should engage the attention of the educational administrators and planners of our country to build a viable and strong foundation for the future needs of India.

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Teaching Chronobiology in Indian Universities

M.K. CHANDRASHEKARAN

In this article I plainly wish to report my own experiences in teaching in an Indian University a modern area of biology—*Chronobiology*—to M.Sc. degree and M.Phil. degree candidates. Chronobiology is the study of biological rhythms. The subject deals with the physiology of time measurement in organisms—from unicellulars to humans. The earthly environment we inhabit is spectacularly periodic as a result of the rotation of the earth on its own axis causing the geophysical solar day, the rotation of the moon around the earth causing the lunar month of 29 days and the rotation of the earth around the sun-causing the calendar year and the several seasons. Organisms have adapted themselves to this "temporal" order of environment. Adaptation of the organisms to the "spatial" order of the environment is the concern of the science of *ecology* which is taught in universities the world over. Yet chronobiology dealing with adaptation to time of day, month and year and of immense value in the conduct of medicine, agriculture, aeronautics and astronautics is still not considered a subject worth any deep study in universities neither in India-nor even in advanced western countries.

Eventhough the crucial fact that daily rhythms have been experimentally demonstrated 250 years or more ago to be intrinisic in origin[1] and even heritable i.e. of genetic origin[2] 100 years ago, the study of biological rhythms was taken seriously only after 1960. Professor Erwin Buenning a doyen of rhythm research and the author of the only authoritative monograph in chronobiology[1] states biological rhythms were treated until barely 25 years ago as mystical phenomena and any discussions of them were considered exercises in metaphysics. In this light, it is then not surprising that there is no text book on the subject of chronobiology that treats the subject systematically for the benefit of the novice. There are a number of good compilations of articles presented in specialized symposia[3,4,5,6] and a few monographs.[7,8]

I had taught the subjects of 'biological rhythms in *Drosophila* eclosion' at the University of Tuebingen (FRG) at the level of the Grosspraktikum and in Ferienpraktiak (holiday workshops) over a few years. A word must be said here about teaching and learning in German Universities. The much spoken of "academic freedom" prevailing in German universities is not an empty slogan or concept. The teachers, at the level of the Private Dozent or Universitaetsdozent by which time they would have acquired their, 'Habilitation' (Dr. Aabil) after their first doctorate and hence also their *venia lengendi*—their right to teach, as it were, do offer their own courses. These 'courses' are often very original and reflect the specialization of the Dozent offering them—and for this reason also unique. The students on the other hand, are also absolutely 'free' to choose courses of their choice as long as the time schedules do not clash with those of other courses. Each course (which can be lectures, or Uebungen-practicals etc.) carries certain amount of credits for final consideration of the examination. Talking of examinations—there are *no* written examinations in German Universities and *no* degrees except the 'doctor' degree (Dr. rer. nat. in the sciences and Dr. Phil. in the humanities). Returning to my role of teaching 'chronobiology' at the University of Tuebingen, This was done within the frame-work of the grosspraktika and Ferienpraktika offered by Professor Wolfgang Engelmann on the general topic of "biological rhythms". Each one of us, among his Research Associates and research scholars, offered alongside his or her own speciality. Lecturing was limited to introducing the subject and principles. Rest of the work stretching over 2-4 weeks was in the form of experiments in which the instructors and the students, worked side by side. At the conclusion of the 'Praktika' (courses) the students (in groups of not more than 3-5 per instructor) would write up their 'Protokol' (record) of the (1) aim, (2) methodology, (3) results, and (4) discussion/conclusions of their experiments. Some of these write-ups have indeed been so good, thanks to the very frequent consultations between instructors and students, that they have formed the bases of scientific publications.

In German Universities there are other levels at which students are taught a subject. I have given topics in chronobiology for so-called 'Diplom' dissertations and 'Staatsexamen' dissertations. The standard is roughly equivalent to our M.Sc. degree requirements. The students take 1 to 2 semesters to work on a research project somewhat elaborately and then submit their dissertations—much like the M.Sc./M.Phil. dissertations in our Universities. Another level is the 'Doktorarbeit'—the doctoral thesis—for which a research scholar spends time with a superviser (Doktorvater-literally doctor-father) of his active choice. In practice, and understandably so, the research scholars (Doktoranden) would generally have taken the Grosspraktikum offered by their research Superviser and done their Diplom dissertation under him and in as much remain no strangers to him.

This is the background of teaching chronobiology I brought with me to India and the School of Biological Sciences, Madurai Kamraj University. In many ways I could have done worse than come to Madurai Kamraj University in India. For one thing, the School of Biological Sciences here was and continues to be one of the very few centres in a University set-up where biology is taught in an integrated fashion without water-tight compartmentalization of subdisciplines into Zoology and Botany. In 1975, when I joined the School, advanced courses were being offered to M.Sc. students in animal physiology, plant physiology, molecular biology, biochemistry and immunology. A new subdiscipline-animal behaviour—was added to the various other branches of research and teaching in the School of Biological Sciences. The Unit of Animal Behaviour which came into formal being in July 1975 offers:

(1) a 2-credit (2 hours of lectures per week) courses in ethology for I year M.Sc. students,
(2) a 3-credit (3 hours of lectures per week) to II year M.Sc. students in *chronobiology*,
(3) *chronobiology* as a subject of specialization for the M.Phil. degree programme, and
(4) an annual 6 week "All India Course on Neurophysiology" under the Indo-German Project on Animal Behaviour.

Back to chronobiology and the Indian Universities set up. Teaching of any subject in Indian colleges and/or Universities is stifled and thrust into a straight jacket called the "syllabus". The syllabus instead of being a framework becomes a restrictive alley both for teachers and the taught. Most syllabi are drawn up by teachers whose knowledge badly needs hauling-up and up-dating. I taught for an M.Phil. course in 1978/1979 the subject of chronobiology. The candidates were all teachers whose teaching experience in colleges affiliated to this University varied between 8-20 years. They all clamoured, straight away, for the "syllabus" and would not rest until the guidelines I called syllabus, were given to them. It is a moot point whether they could have done anything with the syllabus themselves in view of shortage of literature in the form of the usual text books, market notes etc. The formal syllabus we followed for self-instruction and formal lectures is reproduced below[9].

I. Introduction

a. Biological rhythms—daily, lunar and annual rhythms
b. Terminology and symbols used in chronobiology
c. Examples of the various categories of rhythms
d. Entrainment and freerun features of daily, tidal/lunar and annual rhythms
e. Historical and recent developments

II. Zeitgeber and Biological Rhythms

a. Zeitgeber—different kinds
b. Zeitgeber as continuous modifiers, cyclic events and discrete informers (pulses, steps etc. in phase shifting)

III. Survey of Rhythmic Phenomena in Plants, Animals and Humans

a. Plants
b. Animals (insects, reptiles, birds and small mammals)
c. Humans
d. Ecological aspects and adaptive functions of biological rhythms

IV. Zeitgeber and Biological Rhythms

a. Principles of entrainment by Zeitgeber
b. Properties of freerunning rhythms
c. Phase shifts and phase response curves
d. Types of phase response curves and their significance

V. Light Relations of Biological Rhythms

a. Light in entrainment
b. LL and DD in relation to period length
c. Light pulse-dark pulse PRCs—"On" and "Off" PRCs
d. "Dawn" and "dusk" roles of light pulses
e. Simulated light and darkness and entrainment of circadian rhythms
f. Arrhythmicity induced by inimical and masking conditions
g. State of the clock in arrhythmia

VI. Temperature Relation of Biological Rhythms

a. Temperature in entrainment
b. Temperature and Q^{10} estimations-probable causes of temperature compensation.
c. Temperature pulses (high and low) and phase responses

VII. The Drosophila Eclosion Clock—a Case Study for the Effect of Light and Temperature on Circadian Rhythms

VIII. Entrainment, Re-entrainment and Transients

a. Transients accompanying phase shifts—the Pittendrigh and Bruce model
b. Transients accompanying re-entertainment
c. Significance of transients (-do they mirror the state of the basic oscillation?)
d. Splitting of rhythms during LL and during enforced re-synchronization
e. Kinetics and time course of transients

IX. Circadian Rhythms and Photoperiodism in Plants and Animals
  a. Plants
  b. Insects
  c. Lower vertebrates
  d. Birds and mammals
  e. Models and hypothesis—external coincidence

X. Circannual Rhythms

XI. Biological Rhythms in the Marine Environment
  a. Tidal and diurnal components
  b. Semilunar and lunar cycles
  c. Beat hypothesis

XII. Clock Compensated Animal Orientation
Sun, moon and star compass orientations-Internal clocks and homing-navigation by migrants

XIII. Models and Mechanisms of Endogenous Time Keeping
  a. Mathematical models-Wever, model-relaxation-tension-Vander Pol's oscillation etc.
  b. Cellular and Biochemical clock mechanisms
  c. Intrinsic versus extrinsic timings-their problems
  d. Subtle geophysical factors in timing
  e. Social synchronization of circadian rhythms
  f. Genetic control mechanisms-Chronon theory

XIV. Biochemistry and Physiology of Clocks
  a. Molecular aspects of circadian rhythms
  b. Significance of endocrine hormones and brain ablation studies-location of the clock.
  c. Interplay of chemicals-modulation of period length, phase shifts etc.

XV. Applied Chronobiology
  a. Human circadian rhythms
  b. Circadian rhythm in shift-working
  c. Circadian rhythm in time zone transitions
  d. Circadian rhythm in astronautics
  e. Circadian rhythm in psychiatry
  f. Circadian rhythm in pharmacology
  g. Circadian rhythm in medicine and surgery
  h. Circadian rhythm in animal breeding
  i. Circadian rhythm in environmental physiology

The problem of literature was acute since both the libraries of the Schools as well as the General library of the University did not have sufficient, copies or even some of the volumes of the Proceedings of International Symposia on the subject of chronobiology. The candidates were encouraged to read and given access to "primary" literature on the subject in the form of a sizable collection of over 1500 papers I had made over the years. There was an overlap in time in the teaching of M.Sc. and M.Phil. candidates when, certain lectures were in common for both categories. I resorted to the German Grosspraktikum model in imparting instructions. My Ph.D.scholars working variously on biological clocks in bats, squirrels, insects and plants were asked to introduce their objects of study in various lectures and also demonstrate the methodology. These scholars also were responsible for the topic for the M.Phil. candidates dissertations and subsequent research guidance. Not having had any model from any an Anglo-saxon University system we are still busy at drawing up and toying with experiments that can be offered in the form of "practicals" for the M.Sc. degree students. We have already laboratory tested the following experiments in an 8 day workshop on "Biolog]cal Oscillations" (16-24 December 1978 conducted in the School of Biological Sciences, Madurai Kamraj University[13].)

Three German scientists, Professors Erwin Buenning, Brinkmann, K. Wolfgang Englemann and an English scientist Dr. D.S. Saunders and Dr. V. Nanjundiah, Prof. L. R. Ganesan and Dr. M.K. Chandrashekaran and his colleagues from India were the teachers.

1. Study of chemical Oscillations-the Zhabotinsky Reaction cycles.
2. Leaf Movement Rhythms of *Desmodium gyrans*
3. Circadian Rhythms in the Leaf Movements of the Cotton Plant.
4. Photoperiodism and Entrainment Within the Circadian System.
5. Temperature and the Biological Clock of the Cockroach.
6. A circadian rhythm in the Flight Activity of Bats.
7. A Circadian Rhythm in the Wheel-running Locomotory Activity in Squirrels.
8. Entrainment and Re-entrainment of the Circadian Rhythm in Squirrels.
9. Circadian Rhythms in Humans.

A manual was compiled by us for the occasion. This promises to be a prototype for a "Manual of Experiments on Biological Rhythms" which can be used in Indian Universities at the University level. The experiments each last 1-2 weeks and yield sufficient data to write up interesting records and each experiment ideally illustrates the basic principles of the several tenets of chronobiology such as (a) entrainment (b) free run (c) phase shifts (d) phase response curves etc. Small light tight cabins, kymographs, thermohygrographs, clinical thermometers and simple activity running wheels (squirrels) and flight activity cages (bats) were all the equipment needed. Our experience gives me the courage and conviction to state that chronobiology can be and must be taught at the University level in India.

This subject, like no other among the several subjects in biology, is interdisciplinary in nature and borrows its methodology from, and enriches several other disciplines. The Madurai experiment with teaching chronobiology with the proper emphasis of involving the students in the process of self-discovery and inter-acting with the scientists who themselves work on chronobiological problems, has, by and large, succeeded. The examples of the spectacular rhythms they were studying were drawn from the environment the students lived in. Thus a "floral clock" with blooming of certain flowers indicating a certain hour of the day was constructed by the students, in a circular graphic form. We had succeeded in making the participants learn a subject for its own intrinsic worth and fascination. As an example of the extent to which we might have succeeded I cite this example. The 'biological oscillations' workshop (supported by funds from the UGC) happened to be held 2 weeks *after* the M.Sc. candidates had faced their final examination in chronobiology. Yet all the M.Sc. candidates participated voluntarily in the workshop out of their own free volition and at their request. This, it will be conceded, rarely happens in India.

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Physics and its Applications: Some 'Teaching' Experiments

M.V. ANANTHAKRISHNAN

Against a background of the far-reaching curriculum developments being initiated abroad, the curricula in India are, by and large, found to be narrowly conceived and outmoded in majority of the cases. It is an accepted fact that "Education" is a three-fold process viz, imparting knowledge, developing skills and inculcating proper interests, attitude and values (Fig. 1). But, educational institutions in India have been mostly concerned with the transference of knowledge only, may be at the expense of skill development and inculcation of interest[1].

The second Ann Arbor Conference was characterised by the recommendation of courses (in Physics) at essentially the same intellectual level[2]. As a consequence, five general courses were delineated viz, (a) students intending to go into graduate work, (b) students desiring to enter industry, (c) prospective teachers, (d) students desirous of using physics for work in other areas, and (e) students wishing to have general education with emphasis on physics.

Keeping the above needs in mind, two different curricula were suggested. They were (Fig. 2): (a) Curriculum 'R' devoted to preparation for research, and (b) Curriculum "S" emphasising on the interpretation of physics and its integration with the other cultural aspects.

Mohanty[3] has analysed the practical work done in a number of Indian Universities. His remarks, as far as undergraduate education is concerned, are that most of the practical laboratory assignments are directly concerned with the determination of well established physical constants or verification of well known laws—"At no stage", continues Mohanty, "does one find an element of discovery or attempt to correlate existing laws with experimental findings."

The methodology of teaching and training leaves a lot to be desired.

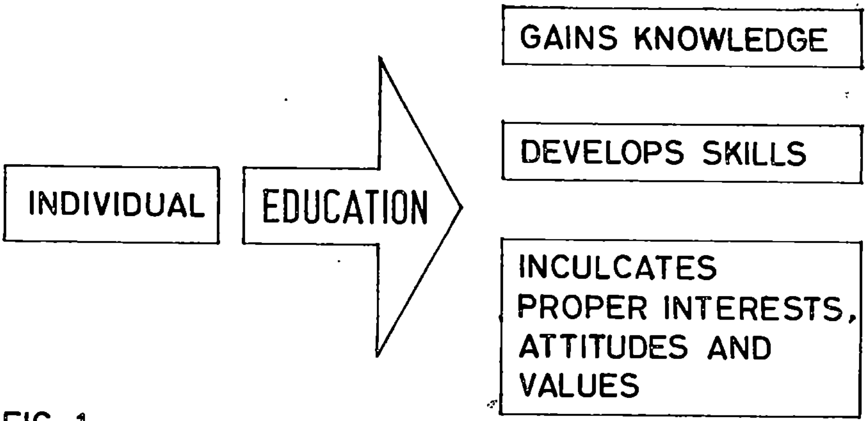

FIG. 1

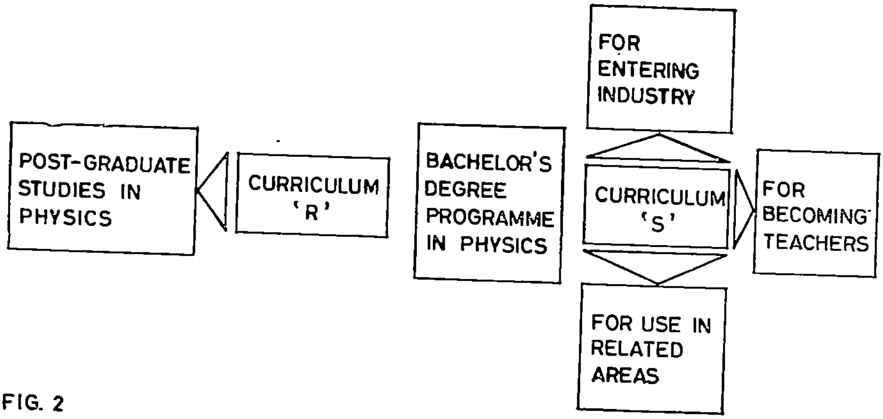

FIG. 2

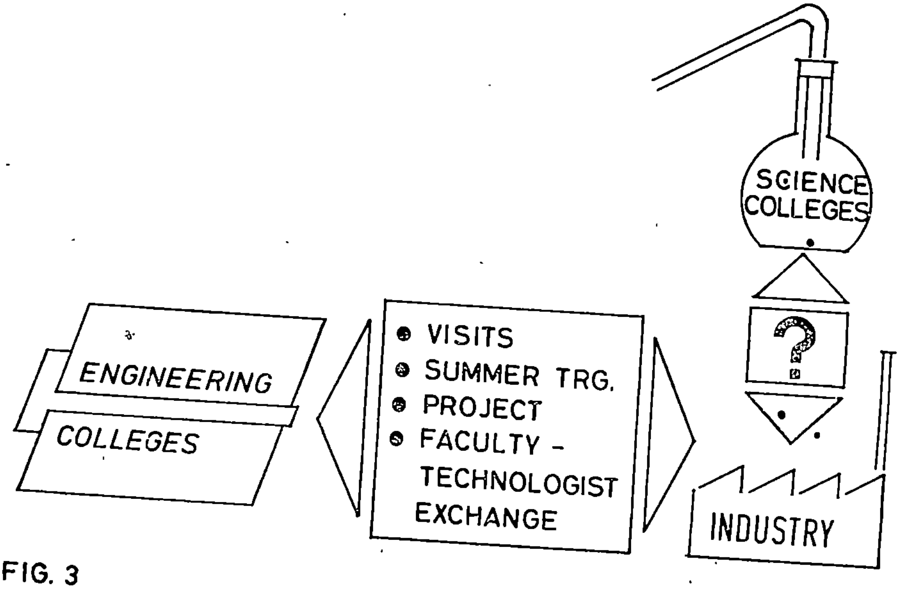

FIG. 3

Many of the teachers in this country still resort to the blackboard as the sole teaching aid and supplement their oral presentations with voluminous lecture notes. Further there is a tendency (one rather unfortunate) to treat 'pure science' and "engineerng" in two water-tight compartments. Needless to say, this leads to the absence of the much needed inter-disciplinary approach. This trend puts the science graduate at a disadvantage when entering industry (Fig. 3). They have to go in for a prolonged training in the industry prior to taking up 'line' jobs. Another factor, that weights rather heavily on the students, is the repetition of some topics (studied during their intermediate courses) in their engineering degree programs[4].

Some Typical Indian 'Experiments'

This Section will discuss the attempts of the author in the direction of making the teaching of physics more application oriented. The experiences are based on actual "experiments" tried out by the author in the National Institute of Foundry and Forge Technology, Ranchi, India. The Institute, situated in the precincts of a giant heavy engineering complex, offers academic programs at the post-diploma level in the areas of foundry & force technologies.

Curriculum Development

The TBO approach is somewhat similar to the MBO (Management by Objectives)[5] technique adopted in management science (Fig. 4). The basic concept propounded for the TBO approach are: (a) Identifying the need (objective) of Physics in the light of the technical course curricula, (b) Developing and teaching the curricula & planning related work, (c) Evaluation schemes in keeping with (a) and (b) above.

As an example, Furnace Technology could be used here to illustrate the concepts given above. If one applies the concepts, one finds that the important facets are: (a) the methods of heating & heating rates, (b) the furnace constituents/components, (c) the measurement & control of temperature, and (d) the control of the "atmosphere".

The facets enlisted were the starting point for developing the related physics content. Briefly, the physics content shaped up as: Methods of heating and heating rates: Fuel heating—types of fuels, calorific value, flash point, viscosity and specific heat of fuel, electrical heating—basic concepts resistance and induction heating; heat transfer—conduction, convection and radiation.

Furnace constituents: Refractories and their physical properties, furnace construction principles.

Temperature measurement & control: Scales of temperature; physical principles of the various temperature sensing and measuring devices; fundamental

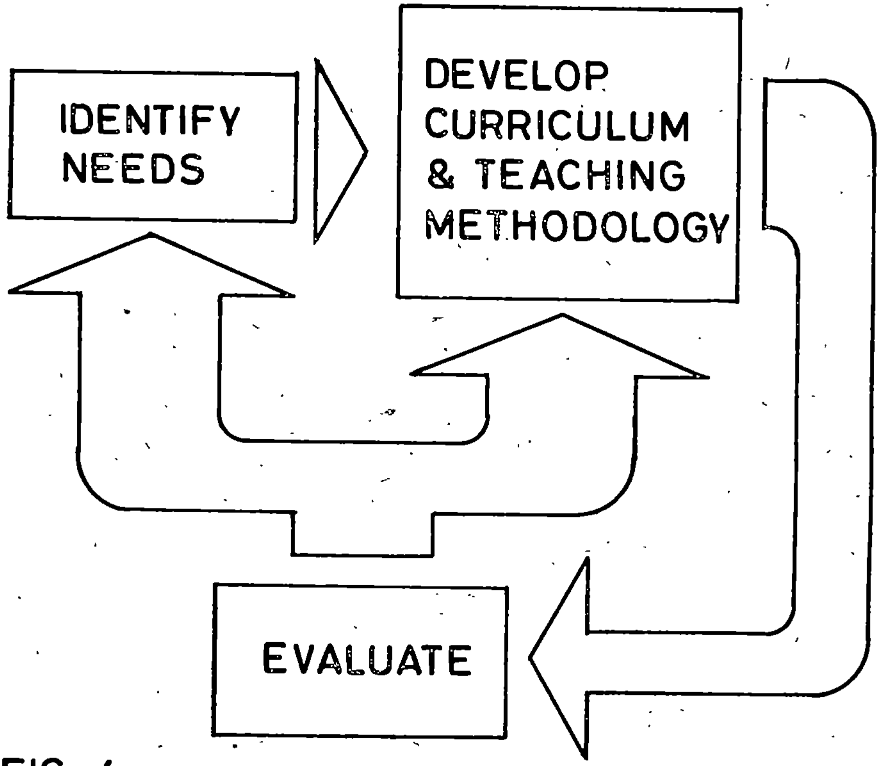
IDENTIFY NEEDS
DEVELOP CURRICULUM & TEACHING METHODOLOGY
EVALUATE

FIG. 4

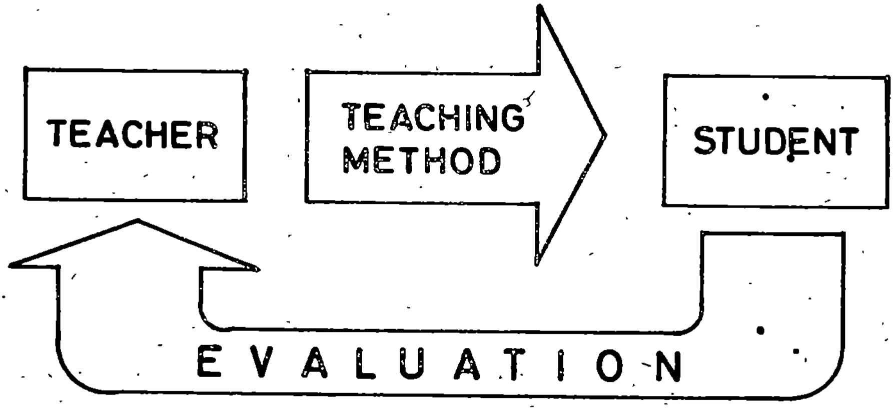
TEACHER
TEACHING METHOD
STUDENT
EVALUATION

FIG. 5

concepts of temperature control and temperature programming.

Laboratory Practice

Practical work has not been given the place it should rightly occupy in science education. As a result of this halfhearted approach, students turn out to be operators and not discoverers[6].

The common practice prevalent in most of the Indian universities requires students to complete a given set of experiments in an academic year. Added to this, there is no correlation whatsoever between a laboratory session and the corresponding lecture on a topic. This is a very serious limitation to the effectiveness of laboratory work, especially when science calls for concrete proof for every law or postulate.

The open ended approach to experiments as viewed from an Indian situation is absent in the real sense of the term. However, it does very often find its way in the annual university examinations. As a result, one notices a high percentage of failures in laboratory physics examinations. The author has made detailed studies for suitably designing laboratory work so as to ensure its efficacy. These are based on studies carried out in the Physics department of the Birla Institute of Technology (Ranchi, India) and the Science of Materials, Dept. of the National Institute of Foundry & Forge Technology (Ranchi, India)[7].

The BIT methodology had the following basic tenets, viz: (a) The students of a class are equally divided amongst two or three instructors. (b) The group of students, attached to a particular instructor, remains under his guidance for the entire academic year. The adaptation of (b) ensured that there was intimate interaction between the instructor and the students. As a result, it was a near perfect situation to make an unbiased and purposeful evaluation of each student on a regular basis. Further, it was found that this arrangement in no way inhibited the students in consulting other instructors or the instructor to guide students outside his group. The working methodology adopted by the author (and followed subsequently by fellow instructors) consisted of the following steps:

(a) The students were informed of their respective assignments a week in advance of their particular laboratory session. Information was also provided to them on resource materials that would best answer their queries and clarify their doubts. Needless to say, the instructor was accessible for midweek discussions, if any.

(b) The students were provided with the various apparatus required for a particular experiment. It was obligatory on the part of the students to completely analyse the experimental set-up and defend successfully the various queries raised by the instructor. Only then they were allowed to proceed with recording data and the like. The author adopted the 'experimental' learning approach on such occasions.

(c) A viva-voce session was held with each student prior to the commencement of a particular experiment. Subsequent sessions were held during the progress of the experiment and culminated with an analysis of the results and interpretations at the end of the day.

(d) An annual examination was set in laboratory practice. Here the student was allotted an experiment (at random by the change process). Evaluation was done on the same lines as the one adopted during the laboratory classes through the year.

The NIFFT experiment was one devoted to the study of applications of physics in the areas of foundry and forge technology. As a typical example, a one—semester (6 months) course in Physics had ten laboratory sessions (3 hours). The experimental objectives were selected from a number of areas: To name a few, these were: (a) Heat transfer, (b) Thermo electric properties of metals, fabrication of thermo-couples, use of industrial thermocouples, (c) Radiation pyrometers, (d) Physical properties of liquids (oil and fuel).

The instructor assigned to the laboratory work was the person who handled the theory classes as well. As such, it was to a large extent possible to correlate the theory and laboratory sessions from time to time. No specific instructional sheets were provided but sufficient reference materials were suggested—to encourage self-learning. To confirm the sound preparation prior to an experiment, a viva-voce was conducted and all lacunae cleared. Slow workers and absentees were allowed sessions at the end of a week or at the end of the semester. The instructors were relatively free to devote more time to such students. Such a philosophy was felt desirable because of the fact that laboratory assignments are "given not for determining the accuracy or efficiency of a student but for making sure that the students understand and grasp the underlying physical principles".

A policy paper on a possible Physics curriculum for Foundry[8] and Forge specialisation makes interesting reading in as far as the aspect of laboratory work is concerned. It clearly brings to light the methods by which laboratory work could be made application-oriented. Illustrative examples would be: (a) measurement of specific heat, thermal conductivity and thermal expansion of metals and alloys (for thermal properties of metals and alloys), (b) Lenses and their properties) combinations of lenses, defects in lenses and their remedies, microscope (for Metallographic studies of metals and alloys).

Evaluation

The effectiveness of any teaching methodology is seen in the feedback through an evaluation system (Fig. 5). This feedback is invariably the end-of-the-term examination.

According to Sodha[9], students mainly aim at doing well in the examination. Their effort is not synonymous with their desire to understand the subject and its applications. Auluck[10] is of the opinion that this is mainly due to the fact that the evaluation is done by external examiners. But, all is not good for internal evaluation as well. According to Ahmed[11] internal evaluation suffers from two drawbacks viz., (i) fear of deflation/inflation of marks and (ii) fear that prospective employers may not accept the validity of internal evaluation. Even then, the Indian Institutes of Technology entirely depend on internal evaluation for a good number of their programs. The experiences of the author in the area of evaluation are quite interesting. All questions were designed to test the students' ability of "applying" physics. Typical examples of the approach (relevant to foundry and forge technology) are : (a) molten metal (at superheat) is cooling in a ladle. Discuss the various contractions taking place until the metal reaches the ambient temperature. (b) You are required to determine the melting rate of a metal in an electric furnace, the electrical specifications of which are available. What are the various physical properties one should know for this purpose? Using this data how would you proceed with the calculation of the melting rate?

Conclusion

The present report is a factual depiction of the various attempts of the author. It is admitted that there may be other approaches that could be (or are) equally or more successful. It is felt, however, that such a report could evince interest in other workers in the area of Physics education. As a result reports could be forthcoming in professional journals in various parts of the world.

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Evaluation in Higher Education

MOONIS RAZA
and
AMITABH KUNDU

The Perspective

The system of evaluation is an integral part of the system of education. The slow and confused response of the faculty and students alike to the challenge of evolving a new evaluation system in independent India is a function of the tenacious grip of the educational system of colonial India over the minds of the Indian elite. Unlike Europe, where the new educational system emerged from the womb of the old to meet the needs of social transformation in the wake of the French revolution, modern education in India was imposed exogeneously with a view to produce what the empire needed—"graduated flunkeys". While the old system had already fossilized, the new that replaced it was dysfunctional and could, at best, contribute to the "development of underdevelopment" by producing commodities on a conveyor belt for the unproductive tertiary sector.

The current crisis of the examination system is the outcome of the contradiction between an inherited dysfunctional structure and the requirements of a developing economy and society. Evaluation under the education system of colonial India was intended to put the stamp of differing "qualities" on the commodities being produced in the teaching shops for the employment market primarily in the so-called service sector. The broad homogeneity of the requirements of the unproductive market determined the uniformity of the evaluation system. The ability to uncritically accept the received truth could be best judged by a uniform, external, end-of-term, comprehensive essay type examination.

The demands of a developing economy and a democratic society call for major shifts in our educational endeavour to which the evaluation system has to respond.

There has to be a decisive shift from teaching and teacher-oriented to learning and learner-oriented education. The faculty-student relation should no longer be viewed as between an active giver and a passive taker, or as between a host and a parasite, but rather as a symbiotic relationship which sustains and enriches both, as participants in the joint adventure of the great odyssey of learning. It is so difficult in this context to escape the temptation of referring to the *guru-shishya* tradition of ancient and medieval India. Whether it be the matter-of-fact *milieu* in the corridors of power or the rarified atmosphere of a seminar, this platitude of all platitudes provides the most convenient theme around which the fabric of airy nothings are quite often woven. Who would be heretical enough not to bow down before the moral stature of the ancient *guru*, who sat under the *banyan* tree and passed on gems of wisdom to the young; or not to look with awe at the *shishya* who drank every word that came from the *guru's* mouth and accepted it as gospel truth, and who willingly washed his feet, tended his cattle, swept his *kutir,* and felt honoured and privileged for being permitted to do so. Breathes there the man with soul so dead whose heartthrobs do not become faster, when he thinks of Nalanda, Taxila or the Hauz Khas *Madrasa*—the glory and the wonder that was Ind!

One need not necessarily be an iconoclast to resist the temptation of escaping into the dark recesses of the past. Respecting tradition is one thing and using it to cloud one's understanding of the present is quite another. The *guru-shishya* tradition emerged from and was rooted in a feudal structure of society, which barred the entry of the overwhelming majority of our people from the sacred domain of learning, and which was based on the parable of the organic seed coming from the teacher and the inorganic soil being provided by the student. Whatever may have been its relevance for its own times, it has been rendered obsolete and out-dated like the geocentric system in astronomy, the four elements in chemistry and the four humours in medicine. The *guru* is dead and has been replaced by the orbiting professor who has to publish or perish. The *shishya* is dead and has been replaced by those who question, even if they do not clearly know what they are questioning. The evaluation system in modern India must respond to this changed situation.

The need has also arisen to evolve a proper mix between dissent and discipline—the two necessary components of the ethos of the educational process. While discipline is the instrumentality through which the system functions, dissent is the vehicle of change. Discipline without dissent is regimentation. Dissent without discipline is anarchy. We tend to move in India from one end of the spectrum to the other and a judicious combination of the two still eludes us. The system of evaluation must respond to this changed requirement of contemporary society.

The objectives of evaluation in this new context need to be redefined particularly because the "I.S.I. (Indian Standards Institution) function" of the examination system has been rendered irrelevant with the increasing recognition that the degree should be delinked from employment and the prevailing practice on the part of employers to evolve their own methods of evaluation for purpose of recruitment. With the redundency of its spurious function, the evaluation system has to come to terms with its problems within the endogenous frame of the learning-teaching process itself. Evaluation should, therefore, be considered not as an external appendage but as an integral part of the learning-teaching process; and its objectives should be redefined in this context.

Viewed thus, evaluation, *ex-definitio* becomes a continuous process and contributes to

(i) the learning process by enabling the learner to appreciate the strong and weak points of his own learning through the process of learning itself; and to

(i) the instructional process by enabling the teacher to understand the strong and weak points of his instruction through an appreciation of student responses to the same.

Quality and Quantity

The essential problem of evaluation in terms of the objectives stated above, is that the students' merit, which is the outcome of the learning-teaching process, is a quality and cannot be directly measured. It is an integrated composite category whose components and attributes are so intrinsically intertwined with each other that they cannot be isolated for purposes of measurement. The attributes and components are themselves qualities and defy the measuring rod.

Both quality and quantity are aspects of objective reality. Quality refers to that which makes a particular object what it is; it reflects its identity. It cannot, therefore, be broken up into homogenous parts; the moment it is so broken up, the identity is lost. Consequently, it cannot be measured in itself. Since quality is capable of being increased or reduced without changing its character, one has to select quantitative indicators of quality in order to make qualitative assessments. Let us take an example from a field of research in which we are engaged in the Centre for the Study of Regional Development. The problems associated with the measurement of the level of development of regions are quite analogous to those involved in the measurement of the merit of a group of students. Development is a quality which cannot be directly measured. It, therefore, becomes unavoidable that quantitative indicators are selected to articulate the development process. Depending on the analytical frame of the regional planner, the following measurable indicators may be chosen:

(i) land capability index,
(ii) aridity index,
(iii) per capita income,
(iv) percentage share of the secondary sector, in the work force,

(v) index of urbanization,
(vi) literacy rate,
(vii) share of the deprived communities in the total population, and
(viii) share of working women in the total female population.

The values of these indicators, either singly or after composition, help the regional planner to arrive at a qualitative assessment about the level of development of different regions under study. It may be noted that the selection of indicators and the weight assigned to them is a function of the theory, which the planner has developed, and is not value neutral. The fundamentalists of Saudi Arabia or India, for example, would not select "share of working women in the total female population" as an indicator of development; the advocates of "ruralism" would similarly reject the "index of urbanisation" or "the percentage share of the secondary sector in the work force".

In Search of a Theory

Evaluation procedures are also rooted in theory; it is another matter that the examiner is sometimes not conscious of it or is able to hide his or her biases under one or the other of a large variety of the so-called objective criteria. A theory which is based on the concept that knowledge is fixed, absolute and received and that the task of education is to transfer this fixed quantum to the new generation would generate tools of evaluation which would be information oriented and would give negative values to originality and dissent. An alternative theory which considers knowledge to be dynamic, and in a perpetual state of becoming would generate tools of evaluation, which would tend to give greater weight to the learner's ability to seek as compared to his capacity to carry a heavy burden of received information and would give positive value to dissent and originality. The search for the suitable tools of evaluation is, therefore, the search for a theory.

The theoretical frame within which tools of evaluation should be generated should be based on the following concepts:

(a) that knowledge of the universe, which should be viewed as a system of interdependencies, is the result of a complex, creative and active process of social practice arising out of man-nature interaction;
(b) that as a consequence of the above, knowledge is ever growing, ever-expanding and in a perpetual state of becoming—that challenging the established, dissenting from the received, and innovating along uncharted paths is the essential instrumentality of development in the realm of knowledge;
(c) that new knowledge grows out of previously accumulated knowledge through the twin process of rejection and assimilation of the old in the new; and this twin process calls for a thorough grounding in accumulated knowledge—one can neither reject nor assimilate

without fully knowing that which is being rejected or assimilated;

(d) that, as a consequence of the above, it is the process of acquiring knowledge and not the passive receipt of dead information which is of crucial significance in the process of learning; and

(e) that theory and practice are intrensically linked in the process of learning—that theory without practice is sterile and practice without theory is blind.

If these be the foundations of an educational theory, the following attributes of merit of a learner, which the tools of evaluation are expected to assess, may be identified:

(a) adequate base in accumulated knowledge;

(b) ability to look at received knowledge critically both in terms of its internal inconsistencies and of its lack of correspondence with the changing reality; and

(c) ability to develop and use analytical tools to identify, explain and predict phenomena in the system of inter-dependencies.

Tools of Evaluation

While the attributes may be identified at a fairly high level of generalisation and are in that sense discipline neutral, the indicators through which they are articulated are to a large extent discipline specific and generalisations in this regard may be hazardous. What is indicated in the following section is an enumeration of attribute-specific tools of evaluation at the Master's level in Geography, which have emerged from the six years of experience in administrating these tools.

The first attribute lends itself to being articulated through recall and recognition, selection, classification and comparison of relevant facts, discrimination between the significant and the less significant, detection of errors, identification or relationships, elaboration and interpretation. Suitable batteries of quiz, multiple choice or false/true objective items may be evolved to measure this attribute. It may, however, be noted that all these tests are more suited for and are generally used for evaluating the information base. It is not being suggested that the objective item test is not capable of evaluating undestanding or deeper insights. The following multiple choice questions, for example, call for an acute understanding of the phenomenon under study:

Q 1. Which of the following is most likely to have happened if there were no Himalayas?

(a) North India would have been a desert.

(b) North India would have sub-zero winters.

(c) There would have been only marginal changes in the climatic regime of Northern India.

Q. 2. If you marry your cook, how would the national income of the country be affected?

(a) It would increase.

(b) It would decrease.

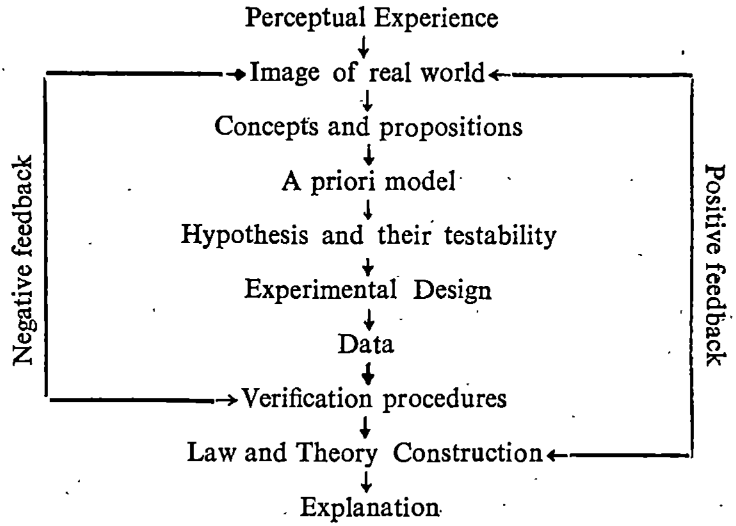
(c) It would remain unaffected.

The formulation of such questions, however, call for abilities of a high order on the part of the examiner and quite often the line of least resistance is taken by formulating the so-called "factual" or identificatory questions. It is, therefore, desirable to supplement these tools by the use of short answer tests which are more amenable to testing the ability to discriminate, to identify relationship and interpret. But the short answer test, howsoever intelligently administered, still imposes constraints on the assessment of the comprehension of intricate and complex relationships. There is no substitute for the time honoured short and long essay for evaluating this ability. While it should not be used for testing *all* attributes as in the traditional system, its use should be encouraged for this limited objective.

While objective items and short answer tests and short and long essays, as elements of sessional evaluation spread over the whole term, are quite useful in themselves, they cannot, even if taken together, serve as a substitute for the end-of-term comprehensive essays type examination which is the most effective tool for assessing the comprehension of the learner in the course as a whole and specially of its inter-unit links. If the wood has not to be lost in the trees, the use of this traditional tool should be continued, of course, with a clear understanding about its limited scope.

The ability to look at received knowledge critically and to contribute to the development of alternative models is quite difficult to assess. The examiner has to tax himself the most in the formulation of the tools of assessment in this area. One set of solutions of this vexed problem lie in the direction of devising reading and/or seminar courses and the specific tools of evaluation associated with them. It may, however, be noted that the distinction between the descriptive and the analytical script is quite difficult to make and the faculty, not rarely, fails to make the grade in grading this attribute. Another set of solutions for this vexed problem may be sought in the direction of the assessment of term papers on suitable themes. The choice of adequate number of topics for term papers is, however, not easy and, not in frequently, the list tends to become repititive and pedestrian. It is sometimes forgotten that the faculty member, in the process of evolving tools of assessing the learner, is also assessing himself. If the fountains of his own research are drying up, his ability to assess this attribute of the student would be rather limited; and the perceptive student does not find it difficult to register it.

The ability to develop and use analytical tools to identify, explain and predict may be tested on the basis of the following model:



The ability to generate concepts and propositions from images of the real world is tested through field work and/or through literature surveys, which provides the student with the concepts and propositions generated by others. Our students, for example, have to spend ten weeks in the field—in two units of six and four weeks each and are awarded credit for the same and are required to generate propositions and hypotheses from their field experience. Literature surveys and book reviews are also essential components of the training programme at the master's level.

The verification procedures call for skills in mathemetics, statistics, cartography and photo-interpretation. These skills are tested in the statistical, cartographic and photo-interpretation labs through practical exercises spread over the term and also as a part of the end-of-term examination.

The logical component is tested through all the exercises that the students are required to do, particularly through term papers and seminars.

Concepts and Composition

Evaluating a student in terms of a number of measurable attributes or courses for the purposes of his final grading is essentially a problem of measuring a multivariate concept not directly quantifiable but having manifestations in several measurable dimensions. When we have n students to be evaluated in terms of m attributes/courses, the question can be mathematically thought of as reducing a data matrix, with n rows and m columns to a column vector with n elements. Within the frame of linear aggregative schemes, which is generally accepted as valid for such compositions, the task may be viewed as of determining an m-tuple column transformation vector w which maps the data matrix X on to an n-tuple column vector Y such that

$$Y=Xw$$

For an ith student the composite grade Y_i can then be written as

$$Y_i=\sum X_{ij}w_j$$

where X_{ij} is the grade secured by the student in the jth attribute/course and w_j is the corresponding weight.

The problem of composition based on a system of weights is, however, a familiar one and has made its appearance in different forms in different branches of academic research specially in the less exact sciences dealing with human behaviour. Before raising the age old problem once again in the context of methods of evaluation, it is legitimate to ask as to how much guidance one may seek from the previous discussions on the subject.

The issue of composition has been raised in various contexts in economic analysis—the most celebrated of them being the estimation of national income which is basically an aggregation of diverse items of goods and services scaled down to some common denominator. Despite the notorious popularity of the per capita income as an index in the formulation of strategies for development, the problems "valuation" unfortunately remain unresolved. Although a large number of countries use market prices to convert physical units to values, the arguments against this shema are quite substantive. There are countries both in the developed as well as the developing world, which do not attach much importance to the demand-supply equilibrating indices.

The question has been examined—perhaps a little more rigorously—within the premise of the theory of Collective Choice. The problem that the economists, in this case, have sought to resolve may be stated as follows: How to obtain a collective ordering of certain given social states when the revealed preference of a number of individuals (generally taken as orderings) are known? A favourite assumption in this context has been that the collective choice be based on the individual ordering. This implies that the Social Welfare Function (W) be 'individualistic' in the sense that W be a function of individual preferences. It needs to be mentioned that the scholars working in this area restricted themselves to such collective choice functions that use ranking of alternatives as the basic data and seek to work out only a composite ordering of the social states. Thus they avoided, almost totally, the problem of determining the levels or intensity of individual or social choices in any cardinal sense. While the welfare economists were busy searching for the rules of aggregation, it was brought out, rather dramatically, by Arrow (1950) that given a set of innocuous conditions on the basic data matrix and the methods of aggregation, it is impossible to obtain a collective ordering. The theorem has been found to be complete in its nihilism as it knocked off all possible functions.

It is, however, not the "impossibility theorem" that has made the educationists aware of the hazards of aggregating ordinal or even cardinal values into a composite index. It is undoubtedly true, and this is sometimes maintained in the discussions on evaluation system, that aggregating grades secured in different courses would fail in articulating the basic concept of 'merit' of the student. Ideally, a university should evaluate a student's performance in terms of a vector (with a number of entries) and not necessarily a scalar (one value). While discussing the methods of measuring inequality. Sen (1973) argues that this is by no means the only field of analysis in which "the predisposition towards a complete ordering has proved to be a major liability". Indeed, in the context of grading system, there is much to argue in favour of an 'incomplete' scale—the University awarding a grading sheet indicating grades in different attributes/courses. It should be the responsibility of the agency interested, as an employer, in using the services of the student, to devise methods of composition in accordance with its requirements. This may be criticised as passing the buck; but, given the heterogenity in the requirements of the using organisations, one has every reason to suppose that the weightage schemes would vary from organisation to organisation.

The Suggested Approach

It is clear from the above that for purposes of obtaining composite grading one cannot proceed far with the help of the tools generated in welfare economics. "As an approach to measurement....it cannot take us very far. For the problems of.... evaluation the royal roads of welfare economics do look a trifle bleak." Evidently a glib professional, who can unhesitatingly give some percentage of marks to a student and the wise professor who finds all cardinal specifications arbitrary miss the essential aspects of the problems of evaluation. Just because no one can tell with any amount of certainty whether a student be awarded sixty three or sixty-five marks out of hundred in a course, it would be unreasonable to stick to the position that students be classified only in a nominal or an ordinal scale. This would appear more unreasonable when we consider the demands of the universities to evolve a uniform grading system comparable cross-sectionally as well as temporally. There is, therefore, no other alternative but to devise methods not only for ranking the students within a group but also for assigning grades in each attribute/course having atleast 'quasi-cardinal' significance. The five axioms of Arrow in the context of evaluation system may be stated as follows:

(a) The final ordering of the students must be reflexive, quasi-transitive and complete.
(b) Any logically possible ordering of the students must be admitted in every course.
(c) If a student gets higher grade in some courses and not lower in

others as compared to another student, the first student must be given a higher composite grade.

(d) A permutation of gradings secured by a student in different courses/attributes (of equivalent credit) must leave his final grading unchanged.

(e) The final ranking of a student *vis-a-vis* another should depend on the performance of the two students in various courses and not on those of the others.

It is evident that when all the five axioms are accepted as reasonable in the context of the evaluation system and if the basic information used is the ranking of the students in various courses, any attempt to grade the students on a composite scale would be mere quantitative jugglery. It is indeed impossible to devise a scheme of aggregation that satisfies the above axioms. It is, however, possible to question the relevance of one of the above axioms, i.e., axiom (e), in the context of composite grading. The gap between the rank values of two students in a course depends not merely on their performance but also that of others in the class. It would, therefore, be unreasonable to expect that the relative position of two students (*vis-a-vis* each other) in terms of the composite grade would remain unchanged even if their rank scores in individual courses keeps one changing depending on the performance of other students.

A more appropriate way of avoiding the "impossibility trap", however, is to widen the information base. One should attempt to work out the final grades not on the basis of rank data but cardinal or quasi-cardinal indicators of the performance of the students in individual courses. Hence, the scores in the nine point scale, which is advocated for the new evaluation system, should be considered neither as a pure ordinal nor a pure cardinal number. Indeed, the nine points of the scale have significance quite independent of the ranking of a particular batch of students. The fact that a teacher cannot only rank a student *vis-a-vis* others but also places him in the nine-point scale should give clues for comparing the grades obtained in different courses. This, in essense, reflects the quasi-cardinality of the scale which makes composite grading a possibility.

For the purpose of grading a student in a course it would be worthwhile to follow a two-stage procedure. At the first stage the students may be ranked *vis-a-vis* each other or may be classified into a number of hierarchic groups. The initial frequency distribution, thus obtained, may be analysed with the help of theoretical distributions, as it permits a proper assessment of the performance of the students in terms of certain expected norms for the class worked out on the basis of the distributions obtained for the students of the previous years. Through such statistical procedures and also using judgment of the teachers of the course, the final ranking or rank categories (not exceeding ten) for students may be determined. At the second stage, these rank categories may be transformed into grade points with the help of additional information on items like the general level of the batch, number of teaching days possible in that year, the nature of the question paper and other exogenous factors likely to affect the performance of the students. This would call for, once again, an exercise of judgment on the part of the teacher and may involve a certain amount of arbitrariness; but this seems to be the only way out. The cardinal numbers for different attributes/courses may be multiplied by the credits assigned to the attribute/course. The statistical methods of aggregation popularly used in social research relay on the data matrix to evolve weightages. The principal component analysis often used in psychometry depends on the corelation matrix for this purpose. These methods, however, involve implicit valuation and there is no reason why this should be acceptable in all situations. In the case of grading system, the general feeling is that the weights or the credits assigned to the courses be exogenously specified and should not be obtained for the data configuration under consideration. The system of weights should directly flow from the analytical frame proposed for the process of learning of which evaluation is an integral part.

Using notations, the steps of aggregation may be described as follows: The basic data matrix X showing the ranking of the students in different courses may be transformed into X, the matrix of grade points. The process of transformation should be regulated by specific rules but the judgment of a teacher would have to play a significant role in this process. The matrix X can then be post multiplied by the credits vector W giving the final vector Y. Thus we have

$$\begin{aligned}
Y_1 &= X_{11}W_1 + X_{12}W_2 + \qquad X_{im}W_m \\
Y_2 &= X_{21}W_1 + X_{22}W_2 + \qquad X_{2m}W_m \\
Y_n &= X_{n1}W_1 + X_{n2}W_2 + \qquad X_{nm}W_m
\end{aligned}$$

The cardinal values of vector Y may once again be transformed into grades in the nine point scale. In this process as well, the role of judgment should not be ruled out altogether. Howsoever one may try to squeeze out every drop of subjectivity out of the evaluation process, one comes back to it again!

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Integration of Higher Education for Effective Vocational Training

M.R. BHIDAY

In India today, as almost everywhere else in the world, people are breaking with the limitations and the safeguards of the past. We are indeed mobilizing our resources without realising that the new age coming at us so fast is pushing us to the edge of a full revolution in human thought and action.

Like all revolutions, this one too is bound to bring dislocations, tensions, and perhaps crushing tasks. But though the risks are great, so are the rewards. The new age is ushering in the most exciting drama of all time. It is lifting the curtain to fresh, creative insight into the origin and essential nature of life, and of the universe we live in.

Most people will agree that in such a period, the education of all who can profit by it—to the limit of their abilities—takes on new importance. It is now more imperative than ever before to provide preparation of the highest quality for those who are to be nation's discoveries, innovators, and interpreters in every field of competence; in science and technology: in arts, religion and specualtive thought: in trade, business, industry and the professions, and in public service and statesmanship.

In India, it is also felt simultaneously to be equally important to use higher education as a means of building a general public of well informed, articulate citizens—men and women who are not only highly skilled but able to think for themselves, capable of choosing wise and responsible leaders to guide their national policies, and endowed with the taste and judgment to put proper values on the things of the mind and spirit.

This dual concern and two pronged objective have not yet molded higher education in India since independence. But today under the impact of slowly rising tide of students, higher education is becoming more mediocre than ever before. Also as a result of mounting pressure of numbers, most educational institutions are undergoing grave difficulties in housing and financing, in providing fully qualified teaching staff and in maintaining good standards of scholarship.

It is now necessary to make the University a huge, comprehensive, and diversified system of higher education that would interact with society to the end that both would grow and develop in mutual support of each other to produce one of the world's great civilisations.

Sometimes, one sees in the University simply the instrument for transferring a certain maximum quantity of knowledge to the growing generation. But that is not right. Knowledge is dead; the University, however, serves the living. It should develop in the young individuals those qualities and capabilities which are of value to the welfare of the nation. Also that does not mean that individuality should be destroyed and the individual becomes a mere tool of the community, like a bee or an ant. This has happened to a certain extent in the United States. The community should not have standardised individuals without personal originality and personal aims, as it would have no possibilities of development. On the contrary, the aim must be the training of independently acting and thinking individuals, who, however, see in the service of the community their highest life problem.

How Can We Propagate the New Ideas!

(*i*) *Motivation:* But how shall we try to attain this ideal? Should we perhaps try to realise this aim by moralising? Not at all. Words are and remain an empty sound, and the road to perdition has never been accompanied by lip service to an ideal. But personalities are not formed by what is heard and said, but by labour and activity.

The most important method of education accordingly has consisted of that in which the pupil was urged to actual performance. This applies as well to the first attempts at writing of the primary boy as to the doctor's thesis, or to the vocational training.

Behind every kind of achievement, there exists a motivation which is at the foundation of it, and which in turn is strengthened and nourished by the accomplishment of the undertaking. To me the worst thing seems to be for any school (I use the word to cover all levels of institutions) to work principally with methods of fear, force, and artificial authority. Such treatment destroys the sound sentiments, the sincerity, and the self-confidence of the pupils. It produces the submissive subject. It is comparatively simple to keep the school free from this worst of all evils. Give into the power of the teacher the fewest, possible coercive measures, so that the only source of the pupil's respect for the teacher is the human and intellectual qualities of the latter.

The other motive, or ambition, or in milder terms the aiming at recognition and consideration, lies firmly fixed in human nature. With absence of mental stimulus of this kind, human cooperation would be entirely impossible. The desire for the approval of one's fellow-man certainly is one of the most important binding powers of society. In this complex of feelings, constructive and destructive feelings coexist. Desire for approval and recognition is a healthy motive, but the desire to be acknowledged as better, stronger or more intelligent than a fellow being or a fellow scholar easily leads to an excessively egoistic psychological adjustment, which may become injurious for the individual and for the community. Therefore, the teacher and the school must guard against employing the easy method of creating individual ambition, in order to induce the pupil to diligent work.

(*ii*) *Centralised Examination is a hindrance to progress:* When we get our thinking cleared up on the real nature of education, we should then be prepared to admit the two great fundamental reforms that I believe are the answer.

The first of these reforms is to free teachers and students from the *tyranny of examinations.* True, steps are being taken to increase the so-called internal component. But still it is tyranny, external or internal. To a large extent the whole process of teaching is to get the pupils ready to pass the examination. As a matter of fact, rumour has it that many teachers do all sorts of tricks so as to raise the ratio of their personal success in the field of education judged solely by the results of these unacademic examinations which bear indeed, no relation to the future success of the pupil in life. They are driven to these horrible methods by the force of public opinion and personal benefits. The parents don't judge the schools and the teachers by the development that goes on in the minds and hearts of the pupils that may be really preparing them for future living—successful or otherwise:

And mind you, there is plenty of good material in the curriculum as it now stands, to do just this, provided the teachers are free to use this. The truth is that the teachers we have now—many of them at least—are not competent with their present training, to do the kind of "free-lance" teaching I am advocating here. They probably would not know how to use a curriculum to develop growing bodies, minds and souls. No calling could demand greater skill and ability. Professional educators and political leaders can speculate and talk till they are blue in the face about what ought to be done. It can never be done until we get the teachers with the ability and the vision to do it. It is only good teachers who can do it and nobody else.

(*iii*) *Teachers' attitudes are most important:* The second necessary reform is to change the attitude of teachers in order to acquire the spirit of self-criticism. Most people are too proud to lay any blame at their own door. But self criticism is the beginning of progress. This is particularly true to in a democratic educational programme.

(*iv*) *The Multi-University:* It is only then that the university and college can carry out their three pronged mission. In fact, I want to make an attempt to rationalize the multiplying functions of the University.

The core of the University will be the intellect, and the application of it to all areas of life. I am, however, going to use new phrases strange in the rhetoric of academics—such as the "knowledge industry"; and ideas foreign to the "idealized university" on the Cambridge and Oxford type, which we never possessed any way. We have to think of the University as the producer, wholesaler, and retailer of knowledge in its three phases viz. research, teaching and extension. Since we are producing knowledge, we cannot escape service. Knowledge today is for everybody's sake. While I accept that the University community should have a soul, I believe that the multiversity should have several souls.

If, therefore, we are talking of vocationalisation and professional courses, on a large scale, we must provide the teachers and the laboratories to practise these courses. I cannot understand the existence of a commerce college without any commercial enterprise, or an institute of business management with no business of its own.

We have so far accepted only one profession, that of medicine where it is essential to attach a hospital to the educational institute. Even our engineering colleges are no different from other science and arts colleges, in so far as the actual practice of engineering, science or arts has no scope to develop.

One can work out the titles only of a large number of vocational or professional courses. That is not the problem. The problem is the facility to develop originality, and an innovative enterprise. Secondly, it is also essential for students to organise themselves in cooperative management of various types of technical and professional enterprise. With this idea in view, I started in the University of Poona, a development oriented industry, which would have served as a model for students to emulate in working on different kinds of manufacturing programs run by the University students. But the idea was misused by vested interests to down me, since our basic concept of a university consists only of a vice-chancellor, a registrar, a set of colleges, departments and examinations to torture everybody.

(v) *The need for functional laboratories of divergent nature:* Merely starting vocational courses is merely repeating what we have done in arts, science and commerce, i.e., to increase the number of unemployable graduates who have not been trained for independent thinking. It would be useful to organise vocational or professional training, provided we also introduce a radical change in the style of teaching activities. The change can be described as "eliminating the cook-book." The experiments are not confined only to the four walls of the laboratory, but could be identified, designed and performed anywhere in the neighbourhood, may be in the industry, university, college, a hospital or a village.

Such a divergent laboratory offers the student the possibility of commitment and choice by making each experiment a changing experience. The student could, in principle and in practice, approach any expert outside the college or the university. The organisational changes necessary to accept these innovations are motivated by a desire to increase the student's freedom and hence, his development as an investigator. Such methods are necessary in all vocational courses which are expected to solve some of the problems of the society. The example of the energy problem could be cited in which case, courses on energy and the various ways to use different methods of conversion to useful forms must be tried out under different settings. Such problems can only be tackled fruitfully by the logical extension of the divergent laboratory viz, the project work.

Project work involves students in a single piece of research directed to obtain a desired solution to some specific problem.

A project is a very good way of inculcating the spirit of enquiry, discussion, and applications of the different techniques and methods which the student has learnt.

Change in Fundamental Outlook is Necessary

Are we able to bring about a new orientation in the objectives of the university is the basic question. We have been discussing and negotiating for nearly four decades now. At the end of these four decades of negotiation, the record is one of dialogue without decision, of decision without action, and of despair piled upon frustration. Universities and colleges have so far achieved institutionalised frustration in a good measure.

We have indeed now to start an era of vigorous experimentation, to bridge the chasm between lecture hall and fraternity house, between research laboratory and the playfield. We have to integrate the curriculum and the students' college work of the traditional type directly with the central issues in their lives and in their society, with a view to encouraging originality and creativeness, and to spurring both faculty and students to a new respect for learning. With the guidance of the enlightened faculty, students have to develop intellectual skills and principles that would lead to new ideas and discoveries. Without even thinking of returning to the rigid educational frame work of the past decades, we have to use the traditional heritage to give cohesion and a sense of purpose to education.

The goals could be the same, but every college could bring out reform radically different from each other, strongly influenced by the rugged thought of reacting against authoritarian approach to education controlled by the tyranny of examinations' psychology. Every college has to discover the importance of learning by doing, and of original thinking, strong inner motivation and direct meaningful experience at every stage of intellectual growth. The true purpose of education is to help the individual realize his possibilities, and to train him, not only to adjust to his society, but to control and mold it.

Education cannot be separated from life, and since life is changing so fast that traditional methods of education become out of date very soon. The traditional method of examinations to which we are holding on steadfastly serve as a huge rock on which every educational reform gets smashed to pieces. It is now necessary to break this rock to pieces before we can move forward. This rock stands on the foundations of vested interests, which will have first to be destroyed, in order to make education a free, enjoyable and scintillating experience and a useful exercise for the good of the larger section of our poor society.

Despite the anguish of vested interests passing as so-called traditionalists, and there has been much, the extension of the university's role to include education in vocational and technical subjects, with an overtone of serving the society, cannot over debase our academic coinage. Instead it will bring the application of high standards of objectivity and of systematic thinking to vocational and technological problems.

Main Problems of Vocational Training

A very serious and difficult problem in ushering more vocational and technological courses is the current shortage, in a number of colleges, of highly qualified teachers, laboratories and workshops.

(*i*) *Shortage of Staff:* Regarding teachers, too many brilliant men and women have drifted away from an educational campus into financially rewarding professions eager to snatch them up. The present reasonably higher salaries will undoubtedly help to attract a greater number of outstanding people into college teaching and to hold the good teachers already there.

However, the teachers who exist today should be prevented from getting out of date which is happening at a very rapid rate due to the by and large inactivity of teachers in keeping themselves abreast of developments in their own subjects. There is a growing sense of complacency and taking recourse to less exertion by using trade union activities. There is no justification and valid argument for the teachers growing mediocrity.

(*ii*) *Lack of Modern Media of Teaching:* The teachers training as well as that of students can be achieved if the college and the university combine more effectively to make greater use of the technical devices, advancing science has put at our disposal.

Radio and television, the most captivating of all new means of mass communication offers arresting possibilities. It is no cure all, and it can never fully take the place of a dynamic classroom teacher—a very rare species indeed—nor compensate for the loss of close personal contact between the teacher and the taught. But as enrolments continue to rise and the demand for expert instruction in various types of vocational and technical courses presses harder, the fact is inescapable that, through the magic of radio and T.V., the usefulness of inspiring teachers need no longer be limited to the four walls of the lecture room or laboratory.

The Poona University has worked out a complete program of using the mass media of its own with a chain of colleges, its students and teachers to spread vocational and technical knowledge in the fields of a energy, environment, health, materials, and further to the grass roots in the villages.

The existence of rural colleges then would receive some meaningful purpose which are otherwise doing no useful purpose except of political satisfaction of their local leaders. The college radio and T.V. stations can carry many types of advanced courses including how to use the new mass media which itself is a growing vocational field using technological knowledge in respect of both hardware and software. Interested teachers, on all scholastic levels, can greatly enrich and enliven their teaching with the help of these new tools. At the same time, by eliminating many routine duties, use of the new devices can release more of the teachers' time for the more vital part of the teaching task; to strengthen students' intellectual fiber; to stretch their creative powers, to broaden their human understanding; and to help them make sounder judgement, and a deeper sense of personal responsibility.

(*iii*) *Shortage of space and equipment:* Regarding technical education and shortage of space, it is necessary to transfer all existing polytechnics to the control of the university so as to integrate all education into a well-united structure so that students and teachers can move freely from one discipline to another. This is not possible under the present rigidity which segregates polytechnics from the purview of the university. Many students are not willing to go to polytechnics for diploma education since their value with a diploma diminishes considerably.

With the proposed integration, a great deal of duplication can be stopped at least at the district level. Secondly, the volume of material students must master today is immense—growing as man's knowledge grows, it is, therefore, fairly certain that colleges will soon be under strong pressure to cover more and more ground. If students are to receive adequate professional training in their specialities, and at the same time, get the essential well rounded general education, a useful synthesis of the polytechnics and the colleges under the university would bring about astonishing results in the development of vocational training with a sense of social and scientific responsibility with this multi-disciplinary approach. This will also avoid the nurturing of snobbishness existing in either sector.

Synthesis of Institution and Disciplines

Because of the need for engineers and scientists to keep the nation abreast of the phenomenal advances of our day and to cross the frontiers of new knowledge—a massive program of synthesis of all institutions has to start in India. Someone has to take the lead. Attempts have to be made to integrate several scientific fields, to correlate these closely with other related fields with a view to developing a national utilization outlook, and to stir students, imagination in this direction, by giving them actual work experience in the areas of development.

Powerful forces in the world are making this inevitable. One of them is the automation, which eliminates dull and dreary jobs, but creates new jobs calling for skills, intelligence, and versatality of a high order. The second is breath taking rate at which knowledge is growing. It has long been too much for any one mind to master. This has forced people to specialize, sometimes in their over narrow limits, and will no doubt continue to do so. Yet, the experience of the past has shown that when specialisation is pushed too far, one ceases to be "educated" at all. Specialisation will perhaps have to be broken down and the burden more widely borne.

At the same time, a world of multiplying specialists will desparately need people who can see beyond their own jobs to larger issues. This is one reasons why we should always try to build special education on a base of general education that has breadth and flexibility and multidisciplinarity. There is also another reason which is more immediately practical. Our world is changing so fast that there is no guarantee that today's vocational speciality will be relevant tomorrow. Individual training, therefore, must be wide enough to help people survive the ups and downs of demand and to adapt themselves without too much difficulty to the new conditions that are sure to come a number of times in one life.

The integrated university schools that I am advocating have to provide a firm foothold of general education while developing a high degree of some special competence in one or more fields in almost everybody. For this, we have to pack more and more information and training into all our graduates. The present centralised examination system is totally irrelevant to do such real education oriented towards the creation of personalities of graduates in the rapidly changing world. As time goes on, we may even find a way to raise the level of intelligence itself. It is known that the IQ is not unchangeable. It depends in a large measure on environment and background, and varies with one's changing moods and emotions. It has also been known to jump dramatically and permanently.

What makes it jump and how can it be made to do so? Can civilisation raise itself by its own bootstraps? I believe that integration of knowledge alongwith the unity of all sciences might change the whole aspect of education more fundamentally than anything that has happened in the past thirty centuries. Perhaps this has happened in the vedic times, since the vedas seem to contain almost everything which have lost by our negligence.

We are still teaching our children the way the Greeks taught theirs—only usually not so well—We have adopted it via Europe and England. Someday we are going to rediscover our own real learning process, and when that day comes, India will really start getting somewhere in the world.

At this moment in the stormy evolution of higher education in India, what new demands are made on the colleges and universities? For one thing, people are asking for more new professions and semi-professions, with supporting programs leading to new degrees. It is necessary to start a planned development to provide an increase in graduates and professional education in general, and more advanced training for teachers in particular; more careful and complete search for talent and its utilization, and more personalised guidance in placing so trained students into their proper occupational niches, and continued emphasis of arts, science and technology with social relevance.

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The Status of Women in Science in India

MAITHREYI KRISHNARAJ

'Formal' Science is only a few hundred years old. In the present context it is imparted through formal education and is practised in the formal institutions. This feature of science as a specialized activity, obscures the fact that science is as old as human civilisation. Natural phenomena have been observed, and recorded with considerable accuracy; in the practise of productive skills, through cumulative knowledge, technologies had been evolved; in the matter of health care, and diet a vast body of knowledge exists and is practised all over the world, and more so in the more developed civilisations. Subsistence economies had their inner coherence and were efficient at the level of thrifty use of resources and conservationist in approach. In such economies men and women participated equally in productive activities: women's contributions were recognized and were essential to the system. As significant participants in production, they shared in the productive skills of the community. Not only that; they had indeed a very special role to perform as the managers of the household and as the reproducers of the workforce. For the care and maintenance of the house and the members of the household, innumerable processes are involved. In the whole area of food processing, food preserving, it is women's knowledge and expertise that has kept the economy running. These are lightly dismissed as women's preoccupations and their contribution to the economy of the household has nowhere been assessed properly. There is need for extensive documentation in this area. All these activities presumed a high degree of knowledge of the characteristics of various substances and their use. The chemistry of these processes was indeed well understood. Our grandmother's day to day activities are amazing in the range and complexity of knowledge displayed. They performed these tasks with skill, care and confidence. More than in any other field, health, child birth and child care required the special knowledge of women. These were women's domains where they assisted each other. "Sisterhood" was automatic and spontaneous.

Formalization of scientific activity has created a wide chasm between the science of every day life and the esoteric science of books and laboratories. With an emerging modern-sector, the dichotomy between mass-culture and "modern" knowledge has widened enormously so that the kind of continuous articulation that was possible between one's occupational role and domestic role has broken down. In the latter, it remains at an empericist level, passed on through oral traditions. As it is, the proportion of men seeking higher education is very low. For these men who are operating in a modern sector; their home lives would be still revolving around traditional norms. Their mothers, sisters, wives lived in a different world.

With the entry of women into higher education and into the scientific profession, one might conceivably expect that as role occupants in two spheres, some articulation between the two spheres would take place. The girl 'doing science' in the laboratory is also the manager of the household-economy and the mother of children, the provider of the members of the household but the implanted character of science makes chances of this articulation taking place, less likely. Science as is practised now in India has become more of a consumer-product, as higher education itself has become, without significant pay-offs to society.

The spread of science to more women, and the participation of women in the scientific profession, may therefore do very little to harmonize the dichotomy that has emerged between the knowledge given by tradition and knowledge practised in one's occupational roles. It is not denied that there is some impact, but in the social context of India, this will still be relevant only to a minority of women. On the other hand, if there is an impact it can be and often is, a negative one. Many traditional practises that were very valuable are in danger of being discarded.

While the dissemination of science is restricted and a dichotomy has been created between the knowledge of mass-of women and the elite few, it may be beneficial to the women themselves in terms of career-status. That even this has not happened, to any significant extent, the following analysis would show.

Here, in playing the occupation role, we show how sex role stereotypes succeed in creating a secondary status for women through the phenomenon of segregation in occupation. To what extent such occupational segregation exhibits itself in India and particularly in the professional sector is indicated through some comparative data.

Before taking up women in the scientific profession, it is necessary to understand the occupational characteristics of women in the economy as a whole. The occupational structure and shifts in it, have a bearing on the status of women. It is this, rather than the customary crude labour force participation rate of women that is a better guide for assessing the status of women. It is true that historically as societies moved from subsistence economy to market economy, the direct participation of women in productive work has tended to decline to pick up again at a later stage of development as the economy diversifies and can support a larger employment. However, comparison of only the crude labour force participation may be misleading. India has only 13.8% women in the labour force. Do Guinea Bissau, Losotho and Upper Volta with 60% female labour force boast of a higher status for women than Western Europe with 29% female labour force participation? In the absence of many other social indicators, no such conclusions can be drawn.

A significant type of occupational shift that has relevance to the status of women is the phenomenon known as "female-typing". Certain occupations become predominantly female and consequently receive lower pay and lower prestige. This is not a phenomenon confined to the advanced capitalist countries. A similar trend is observable in socialist countries. Dr. Helina Mortimer Seymezack in her paper, "Feminine Occupational Work in a Socialist State", says "The higher rate of activeness (sic) is noted in big city agglomerations which is often the consequence of the feminisation of such centres. By way of example, in Poland, there are 105 women for each man in Lodz agglomeration. Textile industry which is dominant in this agglomeration employs 65% women, the garment industry employing 80% women and the knitting-stocking industry has 72%. Thus we observe the phenomenon of concentration of women in economic divisions with lower wages with by no means, less exhaustive work". There is no word in the Polish language for a male nurse or kindergarten teacher.

Science has been a men's profession. Women's entry in the scientific profession may be seen as an attempt to cross this barrier. How successful have they been? There are some conventional and convenient indices for assessing the extent of female participation or 'feminisation' in any occupation. (i) The proportion of women to total employed in a particular occupation—the femaleness index. (ii) The distribution of the employed women as between occupations or the distributive index. (iii) The extent of shift necessary from a particular occupation or occupations to reach a 50-50 equilibrium of sexes in all occupations, called the segregation index.

To begin with, even within the context of limited participation of women in the economy is there female-typing of occupations in India? If so, of what nature? How does the scientific profession compare or contrast (a) with the general picture of the labour force; (b) with the phenomenon in other countries? See Table 1.

The proportions of women in different occupations reflect the economic structure of the different countries asmuch as the social status of women. The more advanced economics have a higher proportion in 'services' in general. The proportion of women in 'Professional-Technical Work' in India is only 8% of the total employed in that sector. However, there is no 'female-typing'. All the sectors have a small proportion of women. The striking thing is that 'clerical' jobs are not feminised here.

While the femaleness index points to the relative representation of

Table 1

FEMALENESS IN SELECTED OCCUPATIONS (% WOMEN TO TOTAL IN EACH ACTIVITY)

Occupations	*Africa*	*N. Africa/W. Africa*	*Asia*	*Latin America*	*Europe/N. America*	*India*	*USA*
Agriculture and Allied	*Mean-26*	*Mean-16*	*Mean-29*	*Mean-13*	*Mean-28*	35*	17
	high-59 (Zaire)	High-53(Cyprus)	high-53(Japan)	high-59(borvia	high-57(Rumania)		
	low-1(Uganda)	low-1(Bahrein)	low-1(Fiji)	low-0.9(Hondurun)	low-4(Norway)		
Manufacturing	*Mean-13*	*Mean-17*	*Mean-28*	*Mean-29*	*Mean-28*	27	28
	high-42(Ghana)	high-73(Sudan)	high-54(Philipines)	high-56(Hawai)	High-44(Hungary)		
	low-0.8(Zaire)	low-0.3(Kuwait)	low-0.2(N.Vietnam)	low-16(Surinam)	low-10(Luxembay)		
Services	*Mean-28*	*Mean-15*	*Mean-31*	*Mean-54*	*Mean-49*	21	50
	high-58(S.Africa)	high-46(Israel)	high-74(W.Samosa)	high-74(Borivia)	high-65(Denmark)		
	low-0-2(Zaire)	low-22(Yemen)	low-32(N.Vietnam)	how-34(Surinam)	low-35(W.Germany)		
Administrative Managerial	*Mean-6*	*Mean-3*	*Mean-1*	*Mean-12*	*Mean-14*	0.2	17
	high-10(Zambia)	high-6(Bahrein)	high-57(Phillipines)	high-42(Gerenada)	high-47(Switzerland)		
	low-3(Ghana)	low-0.5(Libya)	low-0.5 (Pakistan)	low-5(Surinam)	low-4(Netherland)		
Professional Technical	*Mean-6*	*Mean-20*	*Mean-8*	*Mean-12*	*Mean-12*	8	14
	high-18(Rhodesia)	high-5–(Bahrein)	high-55(Nauru)	high-20(Venezuela)	high-23(Malta)		
	low-0.5(Tanzania)	low-39(Cyprus)	low-0.5(Khmer)	low-5(Jamaica)	low-6(Australia)		
Clerical	*Mean-24*	*Mean-11*	*Mean-24*	*Mean-37*	*Mean-51*	0.1	75
	high-57 (Rhodesia)	high-12(Bahrein)	high-60(Australia)	high-73(Bahamas)	high-76(Sweden)		
	low-0.1(Baruto)	low-0.1(Libya)	low-0.8(Pakistan)	low-22(Paraguay)	low-19(Portugal)		

*Includes estimated household labour

(*Source: Handbook of International Data on Women—Boulding et al. Sage Publication New York 1976*)
Total in each activity = Total workers, men and women.

Table 2

PERCENTAGE OF TOTAL WOMEN WORKERS IN DIFFERENT OCCUPATIONS

Agricultural and Allied		*Manufacturing*		*Services*		*Professional Technical*		*Clerical*	
Tanzania	97	Iran	56	Kuwait	91	Nauru	55	Rhodesia	57
India	83	UK	30	Venezuela	62	Bahrein	52	USA	34
Yugoslavia	71	Australia	24	USA	46	Sweden	22	Canada	32
Poland	46	Poland	20	UK	40	Canada	17	UK	27
Japan	25	DMR	13	Yugoslavia	11	USA	14	E.Europe	10
Q.Europe/N.America	0.1	India	8	India	5	UK	10	India	0.1
						India	0.8		

Source: op cit—Handbook of International Data on Women.

women in different occupations, the distributive index is a significant indicator of the direction of choice of the woman worker.

Table 3

SEGREGATION INDICATOR FOR ECONOMIC ACTIVITY BY OCCUPATION

The percent of females (or males) who must change their occupation to have quality between sexes in all occupations:

Country	*Segregation Index*
Thailand	8
India	13
GFR W. Germany	18
Hungary	28
Poland	32
France	34
Switzerland	35
Sweden	44
USA	44
UK	45
Latin America	76
E. Germany	63

(*Source: op cit—Handbook of International Data*)

This reinforces the conclusion of the proceding sections about the low 'segregation' of women in India occupation-wise.

A certain proportion (albeit, very small) of women have obtained higher education. What characteristic features mark the employed women in the scientific sector? Here we take "scientists" in the broad sense of 'science-qualified'. The data used is that of the 1971 Census—Degree holders and Technical Personnel. The data has, as is well known, very serious limitations. As the coverage was only 60% and differed in the different age groups, on the whole it grossly underestimates the total. However, as it is the only source where cross-information on several related aspects, and related areas are available, it was decided to stick to the Census Data. The difficulties with CSIR Technical Manpower data are: (a) published data on women is not available on certain important aspects: (b) the classification adopted is very different. 'Scientists' include home science, psychology, agriculture, etc. While total estimates are likely to vary a great deal, a comparison of the two on important distributive features shows that there are no serious distortion in the Census figures in this respect.

Table 4

	1971 Census Data			*CSIR-Technical Manpower Sec. 1976*			
	Men	*Women*	*Women as % of total*		*Total*	*Women*	*Women as % of total*
Doctorate	6477	701	9	Doctorate degree holder	26850	2460	9
Masters	73424	15142	17	Masters	241650	36247	25
Other post-graduate	1043	134	11	Bachelors	700000	77000	11
Bachelors & Equivalent	285794	65276	18				
Diploma & Certificate	1806	560	23				

Additions to the stock of scientists have been the result of rapid expansion of higher education among women. From 10.9% of total enrolled in 1950-51, women students constituted 22% in 1970-71 in higher education. The interesting feature is the behaviour of women in faculty choice.

Table 5

DEGREE OF FEMALENESS IN DIFFERENT FACULTIES

Faculty (*1971 Census DH/TP*)	*Per cent of Women* (*of total persons*)
Arts/Humanities	26
Commerce	2
Agriculture	1
Vet. Science etc.	2
Science	22
Engineering/Technology	1
Medicine	17
Nursing	89
Tech./Vocational	6
Others	18

Though obtaining higher education women have 'concentrated' in certain fields only. This observation is confirmed by trends in university enrolment over the years, which has not only sustained this pattern but actually intensified the crowding into Arts/Humanities.

Table 6

DEGREE OF "FEMALENESS" IN DIFFERENT FACULTIES

Faculty	1950-51	55-56	60-61	65-66	70-71	71-72
Arts	16	18.3	24.6	31.5	31.7	32
Science	7.1	8.4	10.5	17.1	17.8	18
Commerce	0.6	0.6	0.9	1.8	3.7	4
Education	32.4	29.8	32.8	34.7	36.5	38
Engg/Tech	0.16	0.19	9.89	9.97	1.0	1.0
Medicine	16.3	18.1	21.9	23.9	22.8	21
Agriculture	0.17	0.20	0.45	0.16	0.4	0.7
Vet. Sc.	0.45	0.39	0.71	0.62	0.7	0.1
Law	2.1	1.7	3.0	3.4	3.7	5
Others	18.8	24.2	26.8	33.2	40.0	38

Source: UGC University Development in India: Facts & Figs. for 71-72 pub. 1976.

There are several possible explanations, but it is obvious that sex role expectations influence choice. This experience of sex differentiated higher education corresponds closely with that of European countries, including Eastern Europe. In Sweden girls consistently opt for humanities while boys go for technical education. In Poland, the same tendency is reported by Helen M. Szymezak.

What about those who have gone in for science education? Women in science are a little more than one-fifth of the total. Here again choice of discipline becomes sex typed.

Table 7

DEGREE OF FEMALENESS BY DISCIPLINE AMONG POST-GRADUATE SCIENTISTS

	Percentage of Women to Total Qualified Persons
Home Science	95.3
Psychology	46.5
Zoology	29.1
Botany	29.2
Other Sciences	15.0
Geography	15.0
Chemistry	11.5
Mathematics	10.4
Statistics	7.6
Physics	6.6
Geology	0.8
Agriculture	0.6

Source: CSIR-Technical Manpower Division—unpublished data.

We can see the "women's subjects" and the "men's subjects"; A typical global phenomena.

Table 8

DISTRIBUTION OF MEN AND WOMEN BY FACULTY AMONG POST-GRADUATE SCIENTISTS (DISTRIBUTIVE INDEX)

	% Women to Total Women in Science	*% Men to Total Men in Science*
Physics	6.0	15.8
Chemistry	16.2	21.0
Mathematics	13.5	19.5
Statistics	1.7	3.8
Bio-Sciences	32.8	13.4
Geo-Sciences	5.8	11.4
Agriculture	0.4	11.0
Others	23.6	4.1

Source: op cit, CSIR 1971 Data.

We have the curious recurrence of female-typing within higher educated women, even though there is no such pronounced bias for types of white-collar jobs as a whole. This is possible connected with the availability of jobs in general.

The status of the science-qualified woman depends very much on the pattern of employment. Here the pattern follows established tendencies, elsewhere among science educated women. Science qualified persons are generally 'employees'. However, differences are observable in the incidence of unemployment by level of education.

Table 9

EMPLOYMENT STATUS OF SCIENTISTS (PERCENTAGES)

	Doctorates		*Postgraduates*		*Bachelor level and equivalent*		*Diploma Certificate level*	
	M	*W*	*M*	*W*	*M*	*W*	*M*	*W*
Employees	89.0	71.5	80.1	54.2	57.3	30.0	11.3	37.5
Self-employed	1.3	1.4	3.4	0.9	6.3	1.6	9.8	4.1
Students, trainees, Apprentices	1.6	4.1	4.3	7.0	12.4	17.0	2.6	4.1
Retired	3.6	0.4	2.5	0.4	2.4	0.3	3.5	0.9
Unemployed trying for job	2.4	12.3	8.3	19.4	17.1	22.5	7.6	17.0
Unemployed not trying for job	0.3	7.7	0.6	14.1	1.8	22.1	1.4	28.0
Unspecified	1.8	2.6	0.8	4.0	2.7	6.5	3.8	8.6

A woman holding a doctorate degree is less willing to remain unemployed than one with a bachelor's degree, but the proportion of postgraduates among women is smaller.

Table 10

EMPLOYMENT BY SECTOR (PERCENTAGES)

	Public	*Private*	*Self-Employed*
Men	61.18	30.9	7.9 (100.0)
Women	57.33	39.6	3.0 (100.0)

The pattern of employment among different sectors shows that while men and women are more in the public sector, the proportion of women in the private sector is higher than among men. This has implication for the terms of employment. Salary levels, working conditions, promotion prospects, job security, etc. are widely different as between various private organisations. For example in a Multinational company, women employees did not get even maternity benefits.

The age-distribution of men and women is more or less similar though there are far greater number of women below 25 years. While 26.8% women are below 25 years, only 12% of the men are. The salary differentials may be partly explained by age-difference and partly by the type of organisation where women work. If we compare this with women arts degree-holders, a general pattern is noticeable, though the concentrations are more pronounced in the case of arts degree-holders.

Table 11

DISTRIBUTION OF MEN AND WOMEN BY TYPE OF ORGANISATION
(Percentage)

Type of Organisation	*Science*		*Arts*	
	Men	*Women*	*Men*	*Women*
Universities	7.0	10.0	3.0	4.0
Polytechnics	0.03	0.03	0.01	0.01
Schools	23.0	39.0	38.0	62.0
Private Coaching	0.01	0.02	0.01	0.3
Natural resources	0.09	0.01	0.02	Negligible
Social Welfare	0.08	0.008	0.01	0.08
Public Sector Industry	0.05	0.01	2.0	1.0
Other Govt. Orgns.	35.0	25.0	41.0	19.0
Private Sector Industry	10.0	0.02	3.0	3.0
Others	15.0	18.0	9.0	9.0

Source: 1971 Census—DH/TP

These proportions conform to the CSIR data. Women are underrepresented in industry, public or private. We have no data on how many women in each category are in managerial positions. According to Ministry of Labour (DGET) the proportion of women in administrative or executive jobs (unclassified) is about 1.8% only.

Teaching, and teaching in schools remains the most preferred option for women but teaching has not yet become feminised, as in Western countries.

Table 12

WOMEN AS % OF TOTAL TEACHING STAFF

Primary School	26
Middle School	37
Secondary School	30
Collegiate level	15

Source: ICSSR-Synopsis of the report on status of women in India, 1975

If we take a look at the facultywise distribution of sexes in teaching, only one in ten is a women science-teacher.

Women scientists in India, to sum up, fall into the familiar gender-differentiated occupational pattern: (a) concentration in teaching; (b) concentration at lower salary levels, (c) concentration in bio-sciences, (d) underrepresentation in managerial posts. The degree of faminization of jobs is still low for there are not yet enough women with higher education to produce this effect.

Unemployment among Women Scientists

In a period of growing unemployment among the educated men and women, science-degree holders are not going to face a different destiny. What is of interest here is whether unemployment is higher among women. Involuntary unemployment would indicate special difficulties women face in obtaining jobs. The causes could be (a) employer's reluctance; (b) special requirements with regard to the job which would suit women.

Voluntary unemployment implies even greater social cost. Science education is three and half times more costly than an arts education. It may be argued that the women who are not employed are 'using' such education in other ways but this does not carry much weight as the level of science education useful to a home-makers, not that of academic type, specialised, subject orientation given at university level.

Voluntary unemployment is lower for women in specifically professional courses. Involuntary unemployment is significantly higher for women than for men except in medicine. Thus unemployment does not appear to be influenced much by the "degree of femaleness" in different areas for the highest incidence of unemployment is in technical education! Job opportunities are not here entirely a matter of 'types of courses' offered and taken. Much more would depend on the capacity of the economy to absorb the people with these qualifications. Why is it that women have more difficulties in obtaining jobs than men? Possibly it may be related to their different requirements. Why, for instance, do women go for more clerical jobs than professional jobs? This may indicate that though women do go in for 'science' few of them are interested in pursuing a scientific career as such. Secondly, there are more bachelors degree holders than masters among women. Unless one knows, establishment-wise, in what type of work women are in, it is difficult to draw conclusions.

What happens to these women when they join a career? Investigations are needed to answer this. From our forgoing analysis, in terms of jobs held or salaries drawn they come off less well than the men.

Conclusions

The majority of men and women are excluded any way from the benefits of scientific knowledge, science being an elitist activity. Women are excluded to a greater extent, the rate of even bare literacy among women being as low as 18.4% can massive social change or change in the status of women through spread of science be possible then?

Within the elitist establishment, women as a class hold a secondary position: in terms of number, in terms of diversification, in terms of posts, held, salary drawn and all such criteria. They have not by and large earned positions of power and prestige in this high-status occupation. Have there been other benefits, then, such as indirect ones of being able to bring changes within their homes? Field studies suggest that science education as at present imparted, has had only a little impact. It is perhaps equally true of men, where the educational system emphasises conformity rather than creativity. It is also not surprising that distinguished performance in terms of research is also rare. Here all kinds of issues and factors compound the result. The selection process into the scientific profession is haphazard as it is; in addition, in the case of women, their social-role expectations rather than aptitudes determine their career course. This is true even within the USSR where women are heads of 28 research institutions. Men in the USSR still outnumber women in science by two times. Women do not get "study-time". a very important requirement for efficient performance. A number of political and educational measures would be necessary. Without such a change, the ability of women to advance their own interest is limited.

For full integration with the process of development, women must participate in all spheres of scientific activity that intimately affect and shape their lives as common members of a society. The sources of inequality for women lie in the imperfect articulation between family requirements and occupational requirements which result in women subsidizing their occupation-costs to the society.

Women of a certain class, have benefited from science education, though this benefit is unlikely to filter to the rest of the women or only to a limited extent even to their own homes but even this class of women benefit less than men, because they are women.

The relationship of women to science today is: (i) the mass of women hold considerable scientific knowledge but such knowledge is at an emperical level, hardened by centuries of acceptance without questioning and in the context of advanced knowledge has a lower status. (ii) a small proportion of women have access to advanced knowledge but this has not resulted in harmonizing their operational knowledge in their domestic roles and the formal knowledge obtained through formal education. (iii) even within their occupational role, as women, they have less equal benefits.

Neither in their domestic role nor in their occupational role have women been able to optimize the benefits of science.

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Notes from Research

SOCIAL, ECONOMIC AND ACADEMIC AWARENESS AND POSITION OF COLLEGIATE TEACHERS—A STUDY

Since the dawn of independence many perplexing problems concerning the need and purpose of education in our modern complex society have been brought to public attention. Education in the contemporary situation is not concerned with mere acquisition of bookish knowledge, but in fact an interaction between the student and the knowledge. A teacher plays a pivotal role in moulding the personality of the pupil not just by way of transmitting orally about what is already there in the voluminous books but in interpreting and presenting life itself in positive, purposive and progressive way to his student. All this makes it imperative on the part of the teacher to be a model personality. However, that cannot be guaranteed because, now-a-days, teaching though regarded as the holiest of the holy, yet it is a profession. As such, any inquiry into the background and attitudes of the teachers is essential. Moreover an insight into their attitudes towards socio-economic problems, academic and allied matters would also reveal their standing vis-a-vis the Society. A teacher is an important member in the society by virtue of his position of influence on blooming minds. He has every opportunity to impress upon the young minds his own prejudices, as well as perceptions, judgments and understanding as the case may be. Major* says "Although we may never knew how a given individual might have behaved under a different set of circumstances it is clear that circumstances do influence behaviour both favourably and unfavourably."

Gone are the days of Ekalavya. Today, a student is exposed to at least half-a-dozen teachers at the collegiate level and hence their influence is also likely to be contradictory, with the end result of contributing anything significant apart from conventional class room teaching. Nevertheless, an examination of the social attitudes of the Teachers would reveal their integral personalities, and an estimate of their economic viability would reveal, inter alia, their social standing as well. And lastly, their academic standing would establish their relevance to their pupils, in particular, and society in general. These considerations made us to undertake a mini survey in our immediate surroundings.

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* Robert F. Major, *Developing attitudes towards learning*, Fearson Publishers, California, p. 4

In the present study, data were collected by way of a questionnaire consisting of 35 questions, having bearing on social, economic and academic aspects of college teachers. The respondents were assured that their responses would be treated confidential so as to draw their free and frank opinions. The questionnaires were valued on the basis of the weightage given to the different responses (Yes 1 No. 0). The sample for the present study is given below:

Table 1

Name of the College	*Total Respondents*
M.R. College, Vizianagaram	60
M.R. College for Women, Vizianagaram	25
M.R. College of Education, Vizianagaram	10
M.R. Government Sanskrit College, Vizianagaram	5
Total	100

Table 2

VARIABLE-WISE SAMPLING DISTRIBUTION

Variable	*Category*	*Total Respondents*
Age	40 below	69
	41 and above	31
Sex	Male	66
	Female	34
Experience	Below 10 years	45
	21 and above	55
Caste	Forward caste	69
	Backward caste	29
	Non-specific	2
Father's education	Primary	18
	Secondary	44
	Graduation	38
Father's profession	Teaching	26
	Professionals	40
	Clerical	34
Mother's education	Primary	67
	Secondary	33

Statistically the data were interpreted. Percentages and critical ratios were calculated. In the present study, the researchers considered seven categories. Critical ratios of these seven categories were calculated. They are as follows:

Category 1

Table 3

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN AGE: 21-30 VS. 51-60

Category	*Mean*	*SD*	*N*	*CR*	*Result*
21-30 years	19.3	1.24	37	7.145	Significant
51-60 years	17.68	1.46	11		

As the critical ratio in the above category is greater than 1.96, it is significant at 0.05 level. So, the present sample shows that there is a significant difference in their opinions towards social, economic and academic awareness of collegiate teachers between the age groups 21-30 and 51-60.

Category 2

Table 4

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN AGE: 31-40 VS. 41-50

Category	*Mean*	*SD*	*N*	*CR*	*Result*
31-40 years	17.00	1.366	32	0.44	Not significant
41-50 years	19.90	1.000	20		

In this category the critical ratio is less than 1.96. Therefore, it is not significant at 0.05 and 0.01 levels. Hence, we can say that 31-40 years age groups do not differ significantly from 41-50 years age group in their opinions.

Category 3

Table 5

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN MALE AND FEMALE

Category	*Mean*	*SD*	*N*	*CR*	*Result*
Male	19.00	1.281	66	2.436	Significant
Female	17.10	1.407	34		

The critical ratio is more than 1.96, so there is significant relationship between male and female in regard to their opinions. Male and female differ in their opinions towards social, economic and academic awareness.

Category 4

Table 6

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN BRAHMINS AND NON-BRAHMINS

Category	*Mean*	*SD*	*N*	*CR*	*Result*
Brahmin	19.4	1.358	58	0.4415	Not significant
Non-Brahmin	19.6	1.219	42		

The critical ratio in the above category is less then 1.96, therefore, there is no significant relationship between Brahmins and non-Brahmins. Brahmins do not differ in their opinions with non-Brahmins.

Category 5

Table 7

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN EXPERIENCE BELOW 10 YEARS AND 21 YEARS AND ABOVE

Category	*Mean*	*SD*	*N*	*CR*	*Result*
Below 10 years	19.04	1.379	45	5.882	Significant
21 years and above	19.80	1.357	15		

As the critical ratio is greater than 1.96, there is significant relation between the respondents with below 10 years experience and 21 years and above experience. Respondents with below 10 years experience do differ in their opinions with those of 21 years and above experience.

Category 6

Table 8

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN FATHER'S EDUCATION: GRADUATES VS. PRIMARY EDUCATION

Category	*Mean*	*SD*	*N*	*CR*	*Result*
Graduation	19.00	1.477	38	5.525	Significant
Primary Education	19.60	1.036	18		

The critical ratio is greater than 1.96. Therefore, there is significant relation between graduation and primary education of father. Respondents' opinions whose fathers' education is graduation do differ in their opinions with respondents whose fathers' education is primary.

Category 7

Table 9

SIGNIFICANCE OF DIFFERENCE OF MEANS BETWEEN MOTHER'S EDUCATION: SECONDARY AND PRIMARY

Category	*Mean*	*SD*	*N*	*CR*	*Result*
Secondary	19.90	1.310	33		
Primary	19.20	1.364	67	2.45	Significant

As the critical ratio is more than 1.96, there is a significant relation between the respondents' opinions with reference to their mother's education. Respondents' opinions whose mothers' education is secondary do differ from the opinions of those whose mothers' education is primary.

While 51% of the total respondents believed in the success of love marriages, women (52.94%) are slightly higher in this opinion than men (50.00%). 49% of the total respondents does not believe in the success of love marriages. In this view, while men are again of the same percentage, women differ with them with a slightly lesser percentage 47.06%. Thus, men are equally divided in their opinions and women are found to be varying but in entirity supporting love marriages. With regard to age, of the category 40 and below, 52.18% are on the positive side. The 41 and above category (48.39%) are favourably inclined to love marriages. Thus, here, the younger generation are receptive to love marriages than the older age group of 41 and above. Women are largely sympathetic to love marriages could be further supported by the finding that in the older age group 33.34%, and in the younger age group 53.57% do believe in the success of love marriages. Men belonging to younger group (47.62%) and older age group (17.138%) endorse love marriages. Thus, on the whole, women and younger age group are found to be believing in the success of love marriages.

The above data may be explained with reference to the awakening of women and younger generations. What with the new outlets now available to them, they perhaps feel that choice of selection would best be left to the individual parties to select life partners rather than enter wedlock by conventional match making. Consequently, they hold the view that love marriages could be successful.

53% of the present sample are in favour of inter-caste marriages. It is found that the backward castes (67.33%) are more favourable to inter-caste marriages than forward castes (31.55%). Women (55.89%) are again a step forward to men (51.52%) in favouring inter-caste marriages. Again, the younger women (62.07%) are more inclined to inter-caste marriages than older age groups (20%). Among men also, younger group (53.65%) are in support of inter-caste marriages to that older age group (48%). Thus, it is inferred that women and younger age group are in favour of inter-caste marriages as is the case with love marriages.

However, 79% of the present sample does not believe in the possibility of casteless society in India. Out of this, older age group (84.39%) and men (80.32%) are predominent. 89.66% of the backward castes are not in the hope of casteless society in India and 24.55%

of the forward castes are hopeful of the possibility of casteless society in this country. It is interesting to observe that though a convincing majority favoured inter-caste marriages, a dicimal minority believed in the possibility of casteless society. This may be due to complex reasons, mainly the Governmental policy of promoting certain sections of the community. In this process, feelings, of caste accentuates rather than vanish. Thus, the respondents might have favoured inter-caste marriages as a matter of personal preference but at the communal level might not have been that optimistic to believe in the possibility of casteless society. The respondents appear to be realistic.

73% of the present sample are in favour of reservation on economic basis. It is observed that forward castes (73.92%) are of this view who at present do not enjoy any reservations. 68.96% of backward castes are also in favour of reservations on economic basis, may be due to their positive and progressive outlook. 75% does not favour any reservations in admitting students reveals that as Teachers they are more concerned with pupils' achievement.

An overwhelming majority of the sample (96%) subscribed to be in favour of family planning, out of whom 95.66% are of below 40 years age groups and 92.41% are of 41 and above age group. While 96.10% of men are favouring family planning, women trail in this view with 94.1%. However, women belonging to 41 and above age group are in 100% agreement with family planning.

It is interesting to note that the present sample is equally divided (50%-50%) with regard to their opinion towards compulsory sterilization. Women (47.06%) are less favourable to compulsory sterilization to that of men (51.52%). 40 and below age group (53.63%) are more favourable to compulsory sterilization than 41 and above age group (41.83%). Men belonging to 40 and below age group (58.53%) and women belonging to 41 and above age group (59.91%) are in favour of compulsory sterilization. This data may be explained as an awareness of the sample towards population explosion. It is also significant to note that 40 and below age group are more aware of the same.

57% of the present sample are found to be in agreement with the view that the contemporary social cinema has positive effect on the society. Out of them, women constitutes 58.82% men 56.07%, 40 and below age group 52.18%, 41 and above age group 67.74% subscribes to that view. In the category of 41 and above age group men 61.85% and women 80% felt the same.

74% of the present sample are found to be not members of any social service clubs, out of which men are 34.85% and women are 8.82%. It may be due to their professional preoccupations and to some extent financial exigencies. Majority of the respondents (83%) are living in harmony with their neighbours without any problems, thus presenting them as sociable. 76% of the respondents are not in favour of westernization. Women (94.1%) and men (66.68%) expressed themselves against westernization. In confirmity with their abhorrence of westernization, 81% felt that consumption of alcohol is a social evil. Here also, women (82.22%) inconfirmity with the Indian tradition expressed themselves against consumption of alcohol than that of men (72.29%).

71% of the respondents are not feeling any difference between a male and female offsprings. Here again, women (76.47%) are leading than men (68.19%). It is the younger generation with 75.77% that does not feel the difference to that of 41 and above age group (61.76%). The data reveals that the sample is progressive and does not discriminate and are not custom bound.

63% of the sample does not have their own houses and 74% does not have any landed property. But 64% felt that they are sufficiently paid. However, only 40% are making long range investments. Though 80% felt that their expenditure pattern is rational, 52% are found to be spending more than 10% of their income towards their personal expenses. And resultantly, perhaps, 49% are having loans. No wonder, 72% wish for an earning life-partner. It is interesting, especially, to note that 80.63% in the age group 41 and above wishing for an earning life-partner, as it is at that stage family expenses mount. It is further interesting that 17.65% of women are not after earning life-partner. Perhaps, they feel that they could stand by themselves when it comes to financing the house-hold.

Though in recent times teachers have become conscious of their professional interests as evidenced by the 70% of the samples wish for headship rotation in affiliated colleges. 61% of the sample do not subscribe to trade unionism. While 68% have arrived at their jobs out of choice, 73.08% of teachers' derivatives comes under this category. 66.22% of the present sample's fathers are non-teachers. Though 88% of the sample feels that the present pupil-teacher ratio is not conducive to good learning activity, an overwhelming majority (91%) regards themselves as successful teachers and only 3% could not decide for themselves. 66% of the sample are found to be not in favour of open book examinations. In this, it is interesting to note that the teachers with 11 years and above experience (36.54%) are in favour of open book system while 69.76% of teachers belonging to 10 years and below experience category are not in its favour.

Academically the sample presents an ideal picture. While 85% are found to be interested in research work, 78% feels that it is useful to their profession. Resultantly, 73% feels that Faculty Improvement Programme designed to facilitate research is laudable. While 77% are in the habit of reading academic journals, 56% are actually found to have published papers/articles. Thus the total picture is very encouraging and inspiring.

In conclusion, it can be said that the present study throws welcome light on some of the important aspects of collegiate teachers in a representative way. The study revealed that they are aware and responsive to crucial social problems, such as caste and family planning. Their overall outlook is found to be progressive and functional. In the economic sphere, the teachers are found to be viable but not altogether invulnerable. In short, teaching profession today appears to be joining the lucritive groups. Professionally, the sample is genuine and conscious of the various factors influencing their carrier, as well as, that of their students' future and performance. Academically, they are found to be suitably endowed with requisite aptitudes and actual performance in the field of research. Thus, this study presents an overall picture of a self-sufficient sample.

U. Lakshminarayana
and
A. Vizaya Dattatreya Sarma

HOPES AND CONCERNS OF ENGINEERING STUDENTS IN INDIA

Aspirations, hopes or aims are closely related to motives. Since motives are not directly observable they must be inferred or abstracted. Psychologists have been unable to give flawless explanations for motives and it will be decades before physiologists will be able to account for the genesis of aspirations.

According to Cantril[1], in the process of development, man learns what to desire and guides his behaviour and intentions accordingly to maximize satisfaction. Once significances and meanings are assigned they serve as filters for both focussing attention and screening out what is apparantly irrelevant. This selective perception leads to the formation of our "reality world". This reality world is the world in which we have our being, the only world we really know.

A research study by him aimed to discover the personal and national aspirations of citizens in 14 countries from all over the world and India was one of them. The aspiration level of Indians was found to be one of the lowest in the world.

Within the population, Cantril found that the illiterate and the uneducated were more concerned about economic matters both as aspirations and worries, whereas the better educated and professional people, white collar and skilled workers were more preoccupied with the job or work situation. Personal values and character, as well as social values were more frequently mentioned by the elite of the population. While health as an aspiration was mentioned by only 4% of the sample, about 20% mentioned it as a worry. The lack of awareness that health is something that can be improved was almost uniform throughout the population.

Aspirations, when compared, were found to be significantly low for the untouchables, the illiterates, unskilled and agriculture workers, and the low-income group. Also, the better educated, the professional and white collar groups, those above average in income expressed both greater hopes and greater fears for the nation; as compared to the illiterates, agriculture workers, the untouchables, the unskilled workers, and those in the lowest income group, who were appreciably less involved with national problems.

In his study Cantril does not mention any differences in ladder ratings due to caste discrimination in India. However, he has studied the differences between the white and the Negro populations in USA. He found that the Negro thought he was worse off at the time of the survey than he had been five years earlier. Compared with the white citizens, his ratings of himself were lower but five years thereafter the differences reduced.

A significant study of career aspirations of technology graduates, was conducted by King.[2] He found that the kinds of employment and the levels of appointment to which they aspire are as much a result of their total upbringing, their overall personality and their family environment, as they are of the educational system from which they have graduated.

As a reason for choosing the engineering profession, genuine vocational interest was cited by a small proportion of students. For most, the choice was governed by the employment opportunities. He states that the number of applicants for seats in various disciplines of technology declines when employment prospects recede. This supports the fact that employment is the chief reason when students choose the profession. The data illustrates that, due to high levels of unemployment in our economy, technology institutes have a much greater task of "socializing its students into the profession". This is not the case for a similar institute in other countries with full employment, where students go into the engineering profession for the purpose of self-expression and creativity, rather than be guided by the over-whelming burden to find a job.

With this background in aspirations of Indians and the career aspirations of technology students, this study aims at finding out the hopes and concerns of engineering students.

Covering a cross-sectional sample of students, it is intended to determine the aspirations and the aspiration level of students and see how these change with background variables such as family income, religion, caste, year of study, and branch of specialization.

The data for this study was collected from the students at the Indian Institute of Technology (IIT) Bombay. There are five such institutes in the country which are considered of national importance. They are responsible for training the student for certain professional roles and inculcating values which further national advancement. According to King the IIT student is trained for the roles of design—or research-oriented engineers and self-employed entrepreneurs. Considering the immense proportion of Government funds sanctioned to the institute, it would be pertinent to ask how successful they have been in inculcating these values and training the students for the above mentioned roles. Any such values and professional inclination and commitment will be directly and adequately reflected in the hopes and concerns of these students. In this capacity, the study may have far-reaching implications for the education policy-makers and the future of technology in the country.

Viewed from a broader perspective, the data would reveal how an engineering student's aspirations compare with those of an average Indian and, also, the rest of the educated elite of this country. Finally, it is hoped that the data collected and the conclusions drawn will add to the research done on what students of a particular profession aspire for in a broad sense, which includes much more than mere job or career aspirations.

Method

Nature of the sample: The sample consisted of 468 subjects of which 188 were first year, 184 were third year and 96 were fifth year students, enrolled for the five-year B. Tech. programme at I.I.T. The number of students from each discipline of engineering were as follows: Aeronautical, 29; Chemical, 94; Civil, 57; Electrical, 105; Mechanical, 121; Metallurgy, 58; 4 did not state their discipline. The mean family income was Rs. 1590/- per month ranging from Rs. 100 per month to Rs. 9,000 per month. 379 students were Hindus, 65 belonged to other religious faiths, 19 rejected religion and 5 did not state their religion. The ages for the total sample, ranged from 16 years to 23 years. 34 (7.3%) students belonged to Scheduled Castes and Scheduled Tribes (SC/ST). These students come from the bottom of the social structure. A small percentage of seats are reserved for these students to offset the handicap due to past discrimination.

Procedure: To measure the students' aspirations, the Self-Anchoring Striving Scale developed by Cantril was used. The Self-Anchoring Striving Scale is a pictorial ladder device called "the ladder of life" with anchoring points 10 and 1, 10 representing the best possible life and 1 representing the worst possible life. The subjects were asked to define on the basis of their own assumptions, perceptions, goals and values and two extreme or anchoring points of the spectrum. The specific instructions given were as follows:

> All of us want certain things out life. When you think about what really matters in your own life, what are your wishes and hopes for the future? In other words, if you imagine your future in best possible light, what would your life look like then, if you were to be happy?
>
> Now, taking the other side of the picture, what are your fears and worries about the future? In other words, if you imagine your future in the worst possible light, what would your life look like then?

This self-defined continuum was then used as the measuring device. The subject was asked where he stood on the ladder then, where he stood 5 years before and where he thought he would be standing 5 years hence.

A number of questions were then asked to give details about the individual's background such as, degree, year of study, area of specialization, family income, religion and caste.

The descriptions of the best possible life and the worst possible life were content analysed and coded into ten categories (see Appendix I). Initially, for the purpose of forming the categories, a random sample of 10% was picked. Subsequently, the responses of all the subjects were analysed and classified into these categories. Only those responses on which at least two out of three judges agreed, were categorized.

Results

Ladder Ratings: The mean ladder ratings for the total sample were found to be, past 5.45; present 6.00 and future 7.85. The F-ratios indicate that there was not significant variation in the mean ratings with respect to year of study, discipline and religious faith (Tables 1, 2 and 4).

For the purposes of analysis and discussion, the students were grouped into five economic classes: lower—below Rs. 500; lower middle—Rs. 500 to Rs. 1500:; middle —Rs. 1500 to 3500; upper middle—Rs. 3500 to 5500 and upper above Rs. 5500. A trend was observed for higher income groups to have higher mean ladder ratings for the past, present and future. The F-ratios indicate that the trend is more significant for the past, the present than for the future (Table 3).

The mean ladder ratings for members of the SC/ST students were found to be lower than those of the other students. However, this T-ratios indicate that this difference in the mean ratings of the two groups was not significant for the past and future but was significant for the present (Table 5).

Categories: The most frequently mentioned aspiration was money and standard of living and the most frequently mentioned concern was job and work-satisfaction (Table 6). No major significant trends were observed in the categories mentioned by respondents in different disciplines and different religious groups.

Comparing students from the three-year groups it was found that third year students mentioned marriage and family as a hope and concern most and the first year mentioned it the least. Economic prosperity and personality development as an aspiration, also, followed the same trend. National aspirations on the other hand were mentioned most often by the first year students and least by the third year students. Both as a hope and a concern, education and profession were mentioned less often and the miscellaneous items were mentioned more often as we move from first to third to fifth year students.

The major difference in hopes and concerns mentioned by students of various income groups was encountered in the miscellaneous category, being mentioned more often by higher income groups. Job as a hope was also mentioned more frequently by them.

More SC/ST students mentioned social status and national and social aspirations as hopes and social status as a concern whereas the non-SC/ST mentioned economic prosperity, personality development, job situation, health and miscellaneous items as hopes and social life, job situation, health and miscellaneous items as concerns; more frequently. However, none of the differences between the two groups were significant.

Table 1

MEAN LADDER RATINGS AND F-RATIOS FOR PAST, PRESENT AND FUTURE FOR YEARS OF STUDY

Year	*First*	*Third*	*Fifth*	*F-Ratio*	*Significance level (P)*
Past	5.33	5.54	5.55	0.48	NS
Present	5.65	5.49	5.70	0.55	NS
Future	7.93	7.65	8.09	2.25	NS

Table 2

MEAN LADDER RATINGS AND F-RATIOS FOR PAST, PRESENT AND FUTURE FOR DISCIPLINES OF STUDY

Disciplines	*Aero.*	*Chem.*	*Civil.*	*Elect.*	*Mech.*	*Met.*	*F-ratio*	*Significance level (P)*
Past	5.29	5.58	5.31	5.29	5.50	5.63	0.35	NS
Present	5.00	5.40	5.35	5.83	5.79	5.67	1.76	NS
Future	8.19	8.02	7.53	7.90	7.75	7.88	0.87	NS

Table 3

MEAN LADDER RATINGS AND F-RATIOS FOR PAST, PRESENT AND FUTURE FOR INCOME GROUPS

Income Group	*Lower*	*Lower middle*	*Middle*	*Upper middle*	*Upper*	*F-ratio*	*Significance level (P)*
Past	4.90	5.23	5.86	6.08	7.00	3.70	0.01
Present	5.02	5.42	6.07	5.96	5.80	4.55	0.01
Future	7.60	7.64	8.19	7.83	9.00	2.59	0.05

Table 4

MEAN LADDER RATINGS FOR PAST, PRESENT AND FUTURE AND F-RATIOS FOR RELIGIOUS GROUPS

Religious Groups	*Hindu*	*Others*	*Reject*	*F-Ratio*	*Significance level (P)*
Past	5.41	5.95	5.39	1.65	NS
Present	5.63	5.65	5.53	0.04	NS
Future	7.85	8.02	7.95	0.26	NS

Table 5

MEAN LADDER RATINGS FOR PAST, PRESENT, FUTURE AND T-RATIOS FOR CASTE

Caste	*SC/ST*	*Non-SC/ST*	*T-Ratio*	*Significance level (P)*
Past	4.97	5.50	1.37	NS
Present	4.79	5.68	2.76	0.01
Future	7.33	7.89	1.79	NS

Table 6

Category	Percentage of Respondents	
	Hopes	*Concerns*
Income and Standard of Living	47.5	23.7
Social Status	9.6	2.8
Marriage and Family	37.0	23.3
Social Life and Friends	14.5	11.1
Personality Development	14.1	14.3
Social, National or International	14.7	5.1
Work and Job Satisfaction	42.3	40.4
Physical and Mental Health	11.1	11.5
Education and Profession	30.8	20.9
Miscellaneous	21.6	11.3

Discussion

The mean ladder rating for the total sample is significantly higher for the future than for the past and present. This finding is similar to that of Cantril's, and shows that everyone lives with the hope of seeing a better future, whatever his past or present condition may have been. The mean ladder ratings for the past, present and future for the IIT students, were much higher than those for the Indian population, found by Cantril. This can be explained by Cantril's own finding that the ladder ratings were higher for literate, professional groups and those from higher income groups. IIT students being a section of the educated elite have higher ladder rating as expected.

The two categories most frequently cited as a hope and concern were job and standard of living. This pre-occupation among IIT students supports King's finding that most students chose the institution or the profession for getting a good job and earning a good living rather than any genuine interest in engineering. This initial concern remain constant over the five year period. With the Institute's good reputation and past performance the concern appears to be rather unjustified and morbid as the alumni have a very good placement record. Also, this obsession with employment and standard of living could have a restrictive influence of the students' creativity and personality development.

Social and national advancement ranked sixth as an aspiration and ninth as a concern for the total sample. This indicates a limited sense of personal involvement with the fate of the country as a whole.

Year of Study: Though the differences in the mean ladder ratings for the students from different years were not significant, there was a significant variation in categories cited as hopes and aspirations. The trends show us how the hopes and concerns of engineering students change as they progress through the undergraduate programme. However, the forces producing these changes could be a subject of great speculation and debate.

An important observation is that the obsession with job remains constant and unaffected during the five-year period. This was the chief reason why students chose the institute or the profession, according to King. Also, education and profession are mentioned as hopes and concerns most often by the first year, less often by third year and least by fifth year students. This trend reflects adversely on the Institute's ability to "socialize the students into the profession", which according to King is its major task. Quite the reverse, it reduces whatever little interest there was initially. Hopes and concerns about the nation's future are also mentioned most often by the first year students. This would indicate that the IIT education neither raises nor sustains national aspirations.

Discipline

The mean ladder ratings for students from various disciplines were not significantly different. The three categories which seem to be most relevant in the context of the disciplines of engineering are standard of living, job and profession. The differences with respect to these categories were not significant. This would indicate that the education is influential only as far as the engineering degree goes, beyond which the discipline has no significant relation with the aspirations of students.

Looking at the employment opportunities, the Training and Placement Office of IIT Bombay gives the following data about the number of job advertisements for each discipline for the year 1977, Aeronautical 3, Chemical 61, Civil 21, Electrical 122, Mechanical 155, Metallurgy 34. Though the employment opportunities in the different disciplines is not the same, the difference is not perceived strongly enough to show up as a greater hope or concern for students of a particular discipline. This could be due to two reasons: Firstly, despite the differences in employment opportunities, there are jobs for all IIT students; Secondly, as King's study shows, more than half the students seek a non-engineering job on graduation. Therefore the discipline of engineering has not bearing on their job aspirations or concerns. This could also explain the fact that there was little difference in the frequencies with which profession and education was mentioned as a hope or concern, by students of various branches.

Income

The mean ladder ratings of the past, present and future were higher for students coming from higher income groups. This finding supports Cantril's work on the Indian populace.

An interesting fact, however, was that the differences in the mean ratings of students from different income groups were found to diminish from the past and present to the future. This indicates that IIT education reduces differences due to economic background thus contributing to social mobility.

Students from higher income groups were found to cite job as a hope and concern more frequently. A possible reason could be that having transgressed the levels of survival the students look for greater self-expression through jobs. These students were also found to mention the miscellaneous category much more often. This is so as they are in a better position to indulge in self interests and other such activities which were included in the category.

Religion

There were no significant differences in the mean ladder ratings of the various religious groups, or in the categories mentioned by them. The students from different religious faiths perceive no differences in their past, present and future. From this, one could infer that educated citizens attribute success or failure less to the fortuitous fact of belonging to a certain faith than to ability and competence.

Caste

The mean ladder ratings for SC/ST students are lower for the past, present and future than those for the non SC/ST students. This is an inevitable consequence of the social stigma due to caste. However, the differences in mean ratings for present is much more than those for the past and future. These findings are similar to Cantril's findings for the Negros.

The higher difference in the mean rating for the present could be due to an acute comparison with others highlighted by the physical and intellectual proximity. In the past they were rarely pitted against the elite of the non SC/ST; and in future, the IIT education is seen as reducing the differences felt at present.

The SC/ST students were quite understandably more pre-occupied with social status and social and national advancement. The non SC/ST students are more concerned about themselves as they have more to gain by perpetuating an elite than from national progress. The SC/ST students therefore, have a greater sense of identification with the country. This identification proves to be a source of satisfaction because an average Indian and the nation as a whole are better off than he is.

However, Cantril in his study of a cross-section of the Indian population found that the untouchables and lower classess were less preoccupied with national hopes and concerns. This may be explained by the vast difference in the education level two samples of SC/ST subjects. The SC/ST students at IIT are more conscious of the national situation and its implications for them.

Standard of living as a concern was mentioned equally by both the groups but as an aspiration it was mentioned more often by the non-SC/ST. The SC/ST do not aspire to a high standard of living but instead, are concerned with a minimum economic standard.

Categories such as personality development, job, health and miscellaneous were mentioned more often by the non-SC/ST students. The SC/ST students are too preoccupied with the more basic issues of survival and social dignity to be able to give a thought to the above matters.

These findings have several implications for engineering education at elite institutions of technology in India. All students, regardless of their backgrounds project a better and a similar future. To that extent the Institute acts as an equalizer. This however is a reflection on the image of the institution and not necessarily on the quality of education per se. As far as engineering education is concerned, a reappraisal of goals and curriculum is necessary in order to: firstly, socialize the students into the profession. This could be encouraged by offering a variety of courses and freedom to students to pick and choose. Added to this must be freedom to pursue independent research and not necessarily do project work in areas defined by faculty members which is a common policy at the Institute. Secondly inculcate social and national values. This speaks for a wider role to be played by the social sciences and making technology curriculum more relevant to national problems, to give a specific example rural technology. Last, but not the least meet the academic needs of the SC/ST students probably by holding supplementary courses in summer.

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APPENDIX

CATEGORIES FOR HOPES AND FEARS

The categories for hopes and fears are listed below. The examples given were cited as hopes by the respondents and their concerns were regarding lack of similar items in their future. The categorizing of hopes and fears was done separately for each respondent.

1. Economic

A good standard of living, lot of money, good house, physical comforts, good income.

2. **Social Status**
   Power, fame, prestige, good position in society.

3. **Marriage annd Family**
   A good wife, a happy married life, well-wishing for kith and kin.

4. **Social Life and Friends**
   Good social atmosphere, many close friends, good understanding with friends.

5. **Personality Development**
   Emotional stability, self-reliance, independence, maturity, responsible nature.

6. **Social, National or International**
   Do social work, uplift the poor, work for national progress, peace in the world.

7. **Job**
   Good job, start an industry, well-paying job, job satisfaction.

8. **Physical and Mental Health**
   Peace of mind, good health, less tension or anxiety.

9. **Education and Profession**
   Further studies, completion of degree course, be a good or famous engineer, contribute to the profession creatively.

10. **Miscellaneous**
    Touring or travelling, enjoy pleasures, indulge in hobbies and interests, no monotony, adventure, challenging life, live in rural areas.

Khalid Ahmed Kazi
and Rehana Ghadially

UNIVERSITY SYSTEM : ORGANIZATIONAL CONTEXT, STRUCTURE AND PERFORMANCE

The development of educational system has been receiving serious attention of our country's policy makers since Independence (Sayeed, 1976). University system has always been a point of interest to investigate as a part of total educational system. From time to time different commissions and committees had been set up to report on University Education. Although these reports showed a major concern for effective management of financial resources of the universities yet administrative and educational matters also received quite a bit of attention. For example Kothari (1966) and Gajendragadkar (1971) showed a marked interest in the review of managerial and administrative matters of university system. However, there is a dearth of systematic expirical research in different aspects of educational administration, such as organizational characteristics, performances and effectiveness of various components of university system etc.

University as an organization functioning within the fold of an environment, therefore, its interaction with the environment has been emphasized by several researchers. In this connotation, university system is compared with a manufacturing system, which imports raw materials, convert them and exports finished products.

Rice (1970) applying system approach to organizational functioning, developed a model of university system, wherein interaction of university system and its components with that of environment and its components were depicted. Likewise, Navchane (1974), Doshi (1974), Sriprakash (1974) also suggested certain models of organization as applicable to university systems. Parikh (1959) suggested ways to study empirically the conditions of Indian Universities and general education.

As an evaluative study of one component part of the University system i.e. Faculty, Miller (1972) pointed out certain indicators that can be utilized as yardsticks for faculty performance. These yardsticks, as inference goes, benchmark the University effectiveness and performance.

In Miller's study, the collected information had a broader coverage in view of including variables like teaching, publications and research as facets of faculty performance. For evaluating teaching, information were collected on chairman evaluation, self evaluation, alumni opinions, etc. For evaluating publications, number of reprints, standard of journals etc. were considered whereas for research facilities, information such as national reputation of the university and the award of research proposals were considered.

Taking a clue from Miller and capitalizing on the substantial understanding of organizational theorists (Pugh et al, 1968) who indicated that organization context variables such as age, size of organization etc. have their impact on organizational processes, we hypothesize to study university systems so as to highlight the multivariate and simple relationships between organizational context variables structural factors and performance criteria of the university system.

Procedure

Sample: The sample of the present study included 60 universities out of a total of 95. The response rate was about 63%. The selection of universities was made in terms of a criterion that if to be included in the present study, the universities should complete 10 years of their existence. The technological institutes such as Indian Institutes of Technology etc. were eliminated from the sample in order to keep the sample homogeneous and restricted to university systems only.

The data were collected through the secondary sources i.e. from the University Handbook compiled and published by the Indian Universities Association (1975). The Handbook provides considerable information on various functional aspects of universities, concerning size of faculty, budgetary provision, age of the university etc.

Variables: The variables included in the study were as follows:

Input Criteria.

Age of the University: This is in terms of years of service from the date of establishment, counting upto 1975.

No. of faculties.

No. of affilitated colleges.

No. of students enrolled.

Budgetary provision: This consisted of income received by the University in the form of fees and other grants.

Output Criteria.

Library facilities index: This is composed of two variables: (i) No. of volumes available in the library and (ii) No. of books used by the students, staff etc.

Research facilities index: This index consisted of number of merit and research scholarships granted to researchers in various disciplines of the University.

Educational facilities index: This index consisted of three variables: Facilities for evening classes, private studies and correspondence courses.

Hostel facilities index: This index was composed of number of hostels available at the campus and the hostel in take capacity.

The size of student population enroled in a given year and the university income collected through students fees were considered as input criteria. The number of faculties and number of affiliated colleges were taken as indicator of size of the university. University age was calculated from the date of establishment of university. Taken as a whole these variables are basic to university systems and were compared against functional characteristics of the university system, i.e. library facilities, hostel facilities, research facilities and facilities for private studies or nonformal education.

Data for all the variables were available in numerical form except for one variable labeled as "facilities for private studies". In this instance descriptive informations were quantified by assigning score '2' to the universities which had these facilities and score '1' to those which did not have these facilities.

Regarding development of composite indices, raw score of the variables were transformed to standard score with a mean of 50 and standard Deviation of 10 and then additive dimensions were computed. The university system was treated as unit of analysis obviously due to the fact that the linkage among various components of the university system can be examined statistically at the aggregate level.

The study neither implicitly assume causality of relationship nor explicitly hypothesize so. In the present framework the study is exploratory in nature, and therefore, all findings are to be interpreted with caution.

Results and Interpretations

Overall multivariate relationships between two sets of variables i.e. input and performance variables are shown in Table 1. The canonical correlation being a suitable technique for estimating overall relationship between the two sets of variables indicated significant relationship for the first canonical variate (Table 1). The amount of variance explained was 63%. The rest of the canonical correlations were insignificant and, therefore, did not deserve a mention here.

Table 1

CANONICAL CORRELATION BETWEEN ORGANIZATIONAL INPUT VARIABLES AND PERFORMANCE VARIABLES

Canonical Variate	*Canonical R*	X^2	*Significance level*
I	.79	80.92	.005

The summary relationship as indicated by canonical R did seem to suggest that covariation exists between organization input characteristics and performance variables. It is, however, more illuminating if specific relationships are examined in detail. Thus, from Table 2, it is obvious that overall strength of student population in universities has a positive relationship with utilization of library facilities i.e. utilization of library books. As would be expected theoretically, it was found that universities with higher income inflow from various sources would tend to have large number of volumes in the libraries as financial allocation would be substantial for library books. This could also be explained in another way, i.e. university's substantial earnings coupled with a great degree of research orientation would direct the financial resource more in favour of purchasing library books.

Table 2

PEARSON CORRELATION BETWEEN ORGANIZATIONAL INPUT VARIABLES AND PERFORMANCE CRITERIA OF UNIVERSITY SYSTEM

Performance Criteria	*Input Criteria*			
	Size of Faculty	*Size of affiliated colleges*	*Size of Student pop.*	*Income*
No. of volumes	.34**	.10	.34***	.25**
Books used	.15	.12	.34***	.09
No. of merit Scholarships	.09	—.10	—.09	.05
Amount of merit Scholarships	.15	.02	.02	—.03
No. of research school	.16	—.01	.06	.24*
Facilities for Evening studies	.08	.11	.17	.21*
Facilities for private studies	.22*	.33**	.29**	.17
Correspondence courses	—.01	—.15	—.07	.08
Hostels	.03	—.11	.04	.21*
Hostel intakes	—.08	—.19	—.08	.03

Note : *N* = *60*
* *p .10*
** *p .05*
*** *p .01*

In much the same way as that of size of the student population, number of faculties, tended to show positive relationship with library functions and facilities for private studies. Number of merit scholarships, amount of merit scholarships, correspondence course and hostel intake capacity did not indicate significant covariation with any of the university input variables. In general there was consistently significant relationship among size of faculty, size of students population, income, number of volumes and facilities for private studies.

Table 3 shows results of stepwise regression analysis conducted for each of the dependent variables. i.e. library facilities, research facilities, facilities for private studies and hostel facilities indices. The Independent variables were age of the university, number of faculties, number of affiliated colleges, student enrolments and university expenditure. Provided in the table are percentage of variation explained by each independent variables and the squared multiple correlation. The results as such indicated that university age tended to explain greater amount of variation in the provision of library facilities as it was quite significant. The overall equation yielded an R-square of .42 which was significant at .01 level of significance. Besides age of the university, expenditure dimension of the university systems indicated significant contribution with regard to research facilities and facilities for private studies. However, it is to be noted that overall equation failed to indicate a significant R-square.

Table 3

STEP-WISE REGRESSION ANALYSIS FOR PERFORMANCE DIMENSION

Dependent Variable	Independent Variable*					
	Age	*No. of Faculties*	*Affiliated*	*Enrolment*	*Expenditure*	*Square*
Library Facilities	31.4%*	1.1%	0.5%	4.7%	3.9%	.42*
Research Fellowships	1.2%	1.9%	0.7%	—	5.85*	.10
Facilities for Private Studies	0.1%	0.3%	2.2%	—	6.5*	.09
Hostel Facilities	0.7	0.1	3.9	2.5	1.	0.8

Note : *Variations explained by independent variables are in percentage form.*
* *p* .10
** *p* .05

A comparative analysis of the results indicated that age and expenditure factors of the university systems are significantly important determinant in comparison with other variables such as number of faculties, affiliated colleges and enrolments.

As presented in Table 4 are t ratios indicating mean differences of two groups of universities, dichotomized in terms of high and low age groups. The cut off point for forming two groups of universities was 30 years. The dependent variables in this instance were performance and university input variables.

Table 4

DIFFERENCE OF PERFORMANCE AMONG HIGH AND LOW AGE GROUP UNIVERSITIES

Input and Performance	*t Ratio*	*p*
No. of faculties	1.53	NS
No. of affiliated colleges	0.96	NS
No. of students	2.72	.01
University Income	1.25	NS
No. of volumes library size	7.50	.001
Volumes used	1.94	.06
Merit scholarships: No.	1.37	NS
Merit scholarships: Amount	0.40	
No. of research fellowships	2.27	.05
Facilities for private classes	1.56	NS
Facilities for private studies	—0.26	NS
Facilities for correspondence courses	0.76	NS
Hostels	2.67	.01
Intake capacity of hostels	2.08	.05

A closer examination of the table revealed that size of student population, volumes in the library, number of books used, number of research fellowship granted, hostel availability and intake capacity of hostels yielded significant mean differences between high and low age groups of the universities. As far as number of faculties added to the universities and number of affiliated colleges which jointed the banner of universities and the income earned by the university were concerned, the growth did not appear to be different with respect to high and low age of the universities.

In higher age group universities, library facilities have certainly been better than those of lower age group universities. The size of library stack and number of volumes used indicated improved library performance (*t* ratio 7.5 and 1.94 respectively). With regards to research growth, grant of merit scholarship did not show significant difference. However, it is interesting to note that older universities encouraged research works by instituting more number of research fellowships, the reasons being obvious. Older universities tended to have better hostel facilities the hostel availability ($t = 2.67$) and hostel in take capacities ($t = 2.08$) in this comparison indicated significant difference between both groups of universities.

With regards to other variables like facilities for evening classes, facilities, for private studies, correspondence courses and university income earned through fees, *t*- test indicated that younger universities had more or less same status as that of the older universities. For a satisfactory explanation as to why there was no significant difference, perhaps some further evidence will be in order.

Discussion and Conclusion

The study highlighted a basic issue concerning identification of a set of indices for the purpose of assessing the university system. As discussed in the present study, the performance indices were library facilities, research facilities, educational facilities and hostel facilities. All the composite indices were employed in a restricted perspective, therefore, they are useful in the restricted sense only. For instance, one such index is research facilities, which is basically composed of research and merit scholarships granted to the students. As such this did not include other facilities like research grants made available from outside the university, therefore, the interpretation is to be restricted to research facilities at the student level. Similarly other indices have to be examined in terms of the contents of the items, they are composed of, so as to avoid serious pitfalls in the interpretation of the results.

As there are several structural, contextual and performance components of university system, it seemed reasonable if relationships among them are depicted. This kind of approach was specifically opted for by the organization theorists who pointed out that certain contextual and structural factors (i.e. input certeria in our study) systematically influence the organizational outcomes or performance dimensions.

Another problem which required our attention is that of considering university as unit of analysis. In fact certain structural process of the organization are difficult to study unless the data is treated at organizational level. Hence taking structural and contextual variables at the university level (taking university as a unit) along with performance dimension aid the interpretation in defining relational linkages between two or more components of the university.

As the results pointed out it is interesting to note that certain input criteria (i.e. structural and organizational context variables) were important in indicating relationship with performance dimensions of the university. For instance some of the performance criteria indicating structural and contextual influence were number of volumes acquired by the university, utilization of books, number of research scholars, facilities for evening studies and number of hostels available on the campus. This is suggestive of the fact that the relationships between input and performance criteria are selectively determined.

Besides this, analysis on the composite performance dimension showed specific relationship. As noted, organizational context and structural variables essentially influenced certain performance dimensions much more than the other dimension. For instance library facilities to a great extent and research fellowships, facilities for private studies and hostel facilities to a lesser extent were influenced by input criteria of the university system. Although some linkages are benchmarked very prominantly, it is premature to theorize on the basis of this study and at the strength of a few variables.

However, in a broad sense, the study seems to confirm organizational theorists who pointed out structural-performance relationship in bureaucratic setting (Blau and scheenehrr, 1971) and contextual-performance relationship in manufacturing organization.

In conclusion, it can be mentioned that university's structural factors such as size of the faculty, size of affiliated colleges, student population and income earned by the university and the contextual factor such as age of the university influenced performance dimensions selectively. However, the relationship was found to be more pronounced with respect to performance dimensions such as library facilities to a great extent and research facilities and facilities for private studies to a lesser extent.

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Omer Bin Sayeed
and
Ravi Kumar Varma

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Communications

THE USE OF STUDENT LOANS IN THE FINANCE OF HIGHER EDUCATION
(A Summary of Western Experience)

Extensive use is made of loans as a means of providing financial aid for students in higher education in Europe, in the United States, Canada and Japan, and throughout Latin America. In most of these countries students may receive both grants and loans from government funds, or through public subsidised programmes, in order to help them finance tuition fees or living expenses while they are studying.

The purpose of this paper is to describe the main characteristics of student loan schemes in these countries, to show the wide variety of schemes which exist, and to summarise international experience of student loans as a means of financing students in higher education. Table 1 gives a brief summary of the main features of student loan schemes in five countries in 1974-5 (the latest year for which fully comparable information is available), and slightly more detailed information is given for Sweden and the United States. In such a brief paper, it is not possible to attempt more than a general picture of student loan schemes in these countries. Even this brief summary, however, is enough to show that student loan schemes are perfectly feasible, that they are widely used in Europe and in North and South America, and that it is possible to devise loan schemes that overcome many of the problems, such as that of a "negative dowry" for women, that have, in the past, been put forward against the idea of student loans.

The Main Features of Student Loan Schemes

There are very few countries which use student loans as the sole method of providing financial aid to students, although in Japan, and certain Latin American countries, the bulk of student aid is provided by means of loans. However, apart from the United Kingdom there are very few Western countries which have no system of student loans. At the moment neither Australia nor the Republic of Ireland provides student loans, although both governments have recently considered proposals to introduce a loan scheme for students. There are, however, well established student loan schemes throughout Scandinavia, in France, Germany and the Netherlands, in the United States, Canada and Japan, and in at least fifteen countries in Latin America.

Table 1

SUMMARY OF STUDENT AID SCHEMES IN FIVE COUNTRIES

	France *(1974-5)*	*Germany* *(1974-5)*	*Netherlands* *(1974-5)*	*Sweden* *(1974-5)*	*U.S.A* *(1976-7)*
Type of direct financial aid to students	Grants, Loans, and Pre-employment Contracts	20% Basic Loan + 80% Supplementary Grant	60% Basic Grant + 40% Loan	15% Basic Grant+ 85% Supplementary Loan	Grants: BECG, SEOG and SSIG Work—Study Program, Loans: NDSLP and GSLP
Percentage of students receiving direct state aid	15	45	38 (universities), 50 higher vocational	70	10 to 52% according to family income level
Maximum award per student (at exchange rates in December, 1974)	$2,099	$2,489	$2,988	$3,086	Grant: $1,500 p.a. Loan: $2,500 p.a. for undergraduates
Are awards related to parental income?	Yes	Yes	Yes	No	Yes
Do students' parents receive tax relief or family allowances?	Yes	Yes	Yes (to be abolished)	No	Yes
Are tuition fees charged ?	Yes but low	No	Yes but low (to be abolished)	No	Yes
Interest Rate on Loans (%)	5	None	None, proposed 8.75	3.2	NDSLP 3% GSLP 7%
Maximum period of repayment of loans	Variable	Variable (up to 20 years)	10 years	Variable (up to age 50)	10 years
Does repayment of loans vary with graduate's level of income?	No	Yes for low incomes	No	Yes and repayment postponed if income low	No

In most of these countries students may take out loans, while they are pursuing courses of higher education, and they undertake to repay these loans, with or without interest, in periods of time ranging from four or five years, in the case of some Latin American schemes, to twenty years or more, in the case of Sweden and Japan.

In the United States, Japan, and in Latin America, university students pay tuition fees and loans are used to finance fees as well as living expenses. In most European countries, however, fees have been abolished and loans are used simply to help students meet the costs of board and lodging.

Some countries, for example the USA, Finland and Japan, make use of commercial banks, either to lend money to students, with the benefit of a government guarantee or interest subsidy, or to organise loan repayments. Other countries, for example Norway and Sweden, have established State Loan Banks or government agencies, which administer and finance student loans.

In several countries students who wish to borrow through government financed loan schemes are subjected to a means test. For example in Germany and Japan, financial aid is awarded to students on the basis of financial need, and students must provide information on their own and their parents' income. Similarly, in the United States, National Direct Student Loans are available only to students from low income families. In Sweden and Norway, on the other hand, all students in higher education are regarded as financially independent, and no account is taken of parental income, when determining eligibility for student loans. In general, in Europe there is a tendency for students to be regarded as being financially independent at an earlier age now, than a few years ago when in several countries students were assumed to be dependent on their parents up to the age of 25 or even 27.

In several countries graduates may postpone their loan repayments if they are ill or unemployed, or their income falls to a very low level. This means, for example, that married women who give up working while they are looking after young children are frequently permitted to postpone loan repayments. Thus, the argument that loans would discourage women students, because of the fear of a "negative dowry" if they married while still repaying a loan, appears to be unfounded in most cases. In Sweden graduates are automatically excused repayment in any year in which their incomes fall below a minimum level; thus, there is an insurance element built in to the scheme, and loans are automatically written off if a graduate dies, or is permanently unable to work because of ill-health. In other countries graduates must apply for postponement if they are in financial difficulties, but in many cases this is granted.

The rate of interest charged on student loans varies considerably, but in most schemes the government provides an interest subsidy which keeps it well below a commercial rate of interest. For example, in 1975 the rate of interest charged on student loans in Norway was 6.5% and in Sweden it was only 3.2%. In the USA there are two loan schemes, the National Direct Student Loan Program, (NDSLP), intended for low-income students and providing very low interest loans, and the Guaranteed Student Loan Program, (GSLP) for middle-income students. The GSLP charges 7% interest, whereas the NDSLP charges only 3%. In a few countries, for example Germany and Denmark, some student loans are interest free. On the other hand some Latin American schemes charge 15 or 16%.

Because of the interest subsidy provided from government funds in most schemes, and the fact that graduates with very low incomes may sometimes be excused repayment, very few of the schemes are expected to be entirely self-financing. In Norway and Sweden, where student loan schemes have been established for many years, the proportion of expenditure on student loans covered by loan repayments was between 25 and 30 per cent in 1975, and some calculations in Denmark suggested that loan repayments would probably never cover more than about 60 per cent of expenditure on new student loans, because of interest subsidies.

There have been a number of proposals, particularly in Canada and the USA for a system of income-contingent loans. Under such a scheme a student would undertake to pay a fixed proportion of his income for a number of years. A graduate with a high level of earnings would thus repay his loan in a short time, but a graduate with a low income would spread his loan repayments over many years. No country yet has an income-contingent loan scheme, although in Germany and Norway the period of repayment of loans varies according to the level of a graduate's income, so that graduates with high earnings do, in fact, repay their loans more quickly than the average graduate.

Table 1 provides a brief summary of the main featurer of student loan schemes in France, Germany, Netherlands and the USA. Most of the information relates to 1974-5, although the figures for the United States relate to 1976-7. Since this time there have been certain changes, for example in Sweden more generous financial assistance is now provided for adults who are studying on a part-time basis, and in the USA the Higher Education Act was ammended in 1978 by the Middle-Income Student Assistance Act, which considerably increased the financial assistance available to students from middle income families. However, the information shown in Table 1 is the most recent comparable data available for all five countries.

Student Loans in Sweden

Student loans have been used, throughout Scandinavia, for at least thirty years, but the most highly developed loan scheme probably exists in Sweden, where all students receive financial aid in the form of a basic grant supplemented by a loan. These loans are used to help students pay for their living expenses, as Swedish universities do not charge tuition fees. The scheme was first introduced in 1964, and at that time, the grant represented 25% of the total, and 75% was in the form of a loan. By 1975, however, the grant had fallen to 15% of the total financial aid for students, and 85% had to be repaid. When the scheme was first introduced, graduates were not charge interest, but undertook to repay the loan in terms of money of constant purchasing power, and the total debt, like the total amount of aid which students receive, was automatically linked to the cost-of-living index. However, rapid inflation in the 1970's has made that particular feature unpopular, and graduates now pay a subsidised rate of interest on their outstanding loans.

Graduates must repay their loans before their fiftieth birthday. This means that the average graduate repays a student loan in twenty or twenty-five years. The loan scheme is administered by a government agency, the Central Study Assistance Committee, and each year a graduate sends the committee his or her tax return. Any graduate whose income falls below a fixed minimum is automatically excused repayment in that year, and in a typical year about 15 per cent of graduates are allowed to postpone repayment.

There do not appear to be major problems in administering the student loan scheme in Sweden. The costs of administration are low, and the proportion of graduates who default upon their loan repayments is also low. Surveys of student opinion have generally shown a high degree of satisfaction with the system of grants and loans; for example a survey of student opinion in 1968 showed that 82% of all unmarried students were satisfied with the existing system of student aid, and 70% of all married students were satisfied, although some felt that the level of aid was too low for married students.

The main problem that has caused a change in the rules of the student loan scheme in recent years, has been rapid inflation. Other problems that are sometimes mentioned by opponents of student loans, for example that loans may act as a deterrent to women, or to students from low income families, do not appear to be significant in Sweden, and in general, there seems to be widespread satisfaction with the system of student loans.

Student Loans in the United States

There are two student loan schemes supported by the federal government in the United States, the National Direct Student Loan Program (NDSLP) and the Guaranteed Student Loan Program (GSLP) , in addition to a number of grant schemes, including the Basic Educational Opportunity Grant Program (BEOG), the Supplementary Educational Opportunity Grant Program (SEOG) and the State Student Incentive Grant Program (SSIG). Students may receive other forms of financial assistance, including subsidised employment opportunities (the College Work-Study Program) and special social security benefits for low-income students. The government also provides special educational grants for war veterans, and after the Vietnam war, these grants amounted to about 40% of all federal expenditure on student aid. Thus, the student aid system in the United States is very complex; it has been modified frequently during the past few years, and there have been many proposals put before Congress for changing the system in the future.

The NDSLP was first established in 1958, for students in financial need, and it is still intended primarily for low income students. The loans are financed from federal government funds, and graduates, pay a very low rate of interest (3%). The GSLP, on the other hand, is a scheme intended for middle-income students, and the loans are provided by commercial banks, insurance companies and credit unions, under a system of federal government guarantees and interest subsidies. The rate of interest on GSPL loans is 7%, and graduates have to repay the loan in 10 years. In order to increase the funds available for lending to students, the federal government authorised a financial institution called the Student Loan Marketing Association (known as "Sallie Mae") which acts as a secondary market for student loans. Banks borrow funds from the corporation, using outstanding student loans as collateral, or even, in some cases, sell the outstanding loans to Sallie Mae. This generates additional funds for lending to students, but it is argued that it has increased the default rate on student loans.

In recent years default rates among American graduates have been high, and various reasons have been suggested for this, including the fact that the repayment period is short, (not more than 10 years) and there is no automatic provision for graduates to postpone repayment, such as exists in Sweden. It is sometimes suggested that commercial banks, which provide loans for students under the GSLP, have little incentive to pursue defaulters, since the federal government provides a financial guarantee. In the past, the Office of Education has been criticised for not attempting to reduce the number of defaulters but in 1978 strenuous efforts were made to reduce the default rate, and it fell to about 11% for the GSLP, although it was still 19% for NDSLP.

The problem of defaulters, together with the escalating costs of interest subsidies have given rise to a number of criticisms of the American loan schemes for students. The increase in the costs of interest subsidies is due to the fact that the interest rate of 3% charged on NDSLP loans and 7% on GSLP loans have not risen in line with other interest rates in the U.S. economy, so that the costs to the federal government are now much higher than was originally planned, and there have been proposals to introduce a floating interest rate for student loans.

Other suggestions for reforming the loan schemes have been put forward in a number of legislative proposals to Congress. For example the Carnegie Council on Policy Studies in Higher Education has proposed the creation of a National Student Loan Bank, which it believes would make loans more easily and widely available to students at much less risk of heavy default rates than under the existing schemes. These loans would be for a longer period than NDSLP and GSLP loans, but would entail less interest subsidy, and the level of repayment would vary directly with a graduate's income.

Other proposals for new types of loan schemes have been put forward, for example an Educational Opportunity Bank, and a Tuition Advance Fund have both been recommended to Congress; both these proposals are based to some extent on the idea of income contingent loans. Thus, many commentators have advocated changes in the existing systems of student loans, but few advocate their complete abolition.

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Maureen Woodhall

REFINING THE QUESTIONS

All pedagogic roads lead to the omega point, that is 'Examinations'. These examinations are instruments for evaluating students' progress. Having realised the limitation and weakness of the existing system of testing in our country some attempts have been made under examination reforms, such as introduction of internal assessment, semesterisation of courses, grading of students instead of awarding raw scores, central valuation of answer scripts, refinement of questions, etc. The refinement of questions can be possible only if proper training is given to the teachers and the questions paper setters of the examinations. The purpose of this paper is to discuss how the questions can be improved so that it can effectively test the knowledge, understanding, application analysis, synthesis and evaluation abilities of the students, pertaining to their subject.

The Questions

Questions in general, can be classified into two major categories, such as, free response type and guided response type. Under the free response type, come the traditional essays, paragraphs and the short answer type of questions. Under guided response type come all the objective type of items/questions. This guided response type can again be divided into two, such as, selection type and construction type. The multiple choice, matching, classification true-false, type of items come under the selection type. Under these types, the students have to select the best answer out of the answers given. The completion type of items is a construction type of question where the students have to come out with their own answers to complete the blank given in the item. Among the guided response types, multiple choice type is the popular item. It is popular because it is more flexible and tests the mental abilities of higher levels also. But as Taylor (1978) says even multiple choice items were not necessarily a more exact method of evaluation. He suggests, since the probability of a correct choice being made by a more intelligent student is greater than that in the case of poorer student, a new testing model—the knowledge intelligence model—should be devised which will take the differential into account instead of the currently popular model.

Free Response Questions

Let us discuss the free response type questions now. Too often in the examinations, broad and general questions of this type are asked. Traditionally we call them essay type questions. The answers for such questions cannot be valued objectively. There will be no scorer agreement for the answers. Each scorer will have his criteria of scoring, resulting in a high variation of scores given to the answer papers. To avoid such situations and to bring in more objectivity, attention should be given for the structure of the questions. Stating the questions in detail and giving no room for any ambiguity are the important steps in the construction of a free response type of questions. For example, "Discuss the various types of food preservation' cannot be a good question. It can be refined as "Heat, cold, drying, and chemicals have been used in food preservation. Explain, how each of these decrease the growth of spoilage organisms in food. Include a specific example of a food that is preserved in each of these ways. Allow 15 minutes for this answer. It should be about 200 words in length." In this question what is expected is made clear to the students. There may not be any ambiguity regarding the size of the answer or the time to be allotted for it, etc. It is also highly desirable to list out beforehand the points expected in an ideal answer, and the numerical weightage to be given for each point.

Besides refining the structure of the free response type questions, a new approach of asking questions is desired now. It is true that each discipline is divided ultimately into units of contents. These contents are about the concepts, principles or assumptions. They will be again about definite situations. While teaching the content, the units of situations will be taught by the teacher with suitable illustrations. In the examinations, to test the understanding of the situation, if a new situation is structured, then the students will have to apply the knowledge received by them in the class room. This approach is named as situational approach in testing. What is needed here is, instead of asking a plain question about a concept or something a new situation is structured for which the student will give the answer. This will be a real problem solving situation. The answers for his type of quetions will normally be of application level or higher than that in the hierarchy of abilities propounded by Benchamin Bloom (1956). The following are some of the illustrations from different disciplines requiring short paragraph answers under this approach.

In psychology a direct question may be asked about Spearman's or Thurstone's contribution towards the theories of intelligence. In such situations the answer to the question will be a mere reproduction of a particular theory. But, if a new situation is structured like the following, the question presents a practical situation where the relevant theory should be applied to answer the question. Example "Ganesh is a bright boy in English. But he is only below average in Mathematics. How could you explain this in terms of theories of intelligence?"

Similarly, in Botany instead of directly asking a question, a situational question may be "A farmer finds that radish plants grow better and given good yield when the soil was given lime treatment. From this information what can you say about (a) PH of the soil before treatment and after treatment. (b) PH optimum for radish. Another example of a situation will be "yeasts are grown in a wide mouthed beaker containing glucose solution. Those at the surface of the solution obtain more energy while those beneath obtain less energy. Analyse the two situations and argue out your reasons."

In Physics to test the point that convection arises due to change of density, a question may be asked like this," In constructing his house, Ram wanted ventilators be provided at the roof top. Why? " Another question on evoporation may be "We feel cool when petrol falls on our body, Why?" In Chemistry, a situational question may be "A laboratory technician got doubt on oxalic acid solution in a bottle, because he saw some yellow precipitate sediment in it. How will he confirm it?" Another question may be "A doubt arose about a cloth sample. The salesman argued it was terene. But the consumer doubted it. If you are referred how will you decide the same?"

In Mathematics, under Calculus, a practical situational questions will be "Find the cylinder of greatest volume that can be inscribed in a given right circular cone." In History instead of asking a direct question, the following may be a desirable approach. "Pen is mightier than sword. Prove this statement with reference to Napoleon", etc.

Guided Response Questions

So far, we have discussed how a situational approach question can be asked with the free response type of questions. The same situational approach is possible even in the construction of guided response type, such as multiple choice type of items etc. Here again, the level of testing will be application or rather higher on Bloom's Taxonomy. For example in Physics a multiple choice question may be like this "A feather and a corn are dropped simultaneously from the same height on moon. How do they fall? Answers. a. the corn moves ahead. b. the feather moves ahead. c. the two move together. d. they do not move at all. Another item may be "When we move down in a lift we feel a. heavy b. nothing c. light d. weightlessness.

Divergent Questions

Another approach to good questioning is asking divergent questions. We call a question convergent or divergent depending upon the nature of thinking it invokes in the minds of the students. For example, 'What is the product of 8 x 5?' The question leads to an usual routine way of answering, that is 40. But the same question if changed like 'Which two numbers make a product of 40?'. For this a number of answers are possible, such as, 10 × 4, 8 × 5, 20 × 2, etc. This type of questions help in developing divergent thinking. Divergent questions should be encouraged both in the class teaching and in the testing situations. To give some examples, in History, "If the following events had not happened what would be the course of history? 1. Continental system. 2. Congress of Vienna, 3. Cremean war, etc. In Geography, some of the divergent questions will be, "Note down two different geographical consequences of the following: 1. If cyclones come daily, 2. If the depth of the oceans decrease to a considerable minimum, 3. If the Great Himalayas sink down, etc.

Conclusion

The practising teachers and the question paper setters in the public examinations irrespective of level of teaching should take congnizance of these recent developments in questioning. It is not easy joke to construct a good test paper. Traditionally, each chapter or topic was easily converted into a question. Then setting up of a questioning paper was not considered as a very difficult job. But now the same will not be accepted as good questions. Preparing good questions or items is a time consuming and a challenging job. It needs the mastery of the subject and language; and a deep understanding of the principles of evaluating the academic achievement.

G. Subramania Pillay

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Book Reviews

The Divided Academy: Professors and Politics, Everett Carl Ladd, Jr. and Seymour Martin Dipset, McGraw-Hill Book Company, 1975. The Academic Profession, Suma Chitnis and Philip G. Altbach, The Macmillion Company of India Ltd, Delhi, 1979.

Many things in India seem to have gotten worse since Independence, and nothing so bad as education. The economy shows signs of perpetual crises and breakdowns; and despite some breakthroughs in agricultural production and industrial manufactures, the relative size of the secondary sector shows little growth, and with eighty per cent of our people living in villages, we cannot escape the consequences of what Marx and Engels called the 'idiocy of rural life'. This indeed is the crucial factor in any appraisal of the socio-cultural, economic and political as well as academic life in our country. A glance at random at our educational institutions is enough to tell us how badly we are caught in a pervasive 'entropy' that afflicts the university life—the academics, the students and the institutions. This is not surprizing since education reflects the socio-cultural, economic and political environment more faithfully than any other occupation or profession. At the same time an academic is supposed to be the creater and communicator of culture, of ideas and visions, and to be a teacher. As intellectuals and as teachers the academics' task is not merely to transmit the existing knowledge but to subject such knowledge to scrutiny, to investigate their relavance and significance, to mould the mind of the young into certain ways of thinking and to provide a direction to their culture without disrupting their moorings. When the academic ceases to be the seer and the conscience of the community and succumbs to the pressures of the society and its cultural and political millieu, this cannot be called except by its proper name i.e. the failure of the academic to perform their function.

As a teacher, I would like to begin this review article with an acknowledgement of our failure in maintaining academic standards and guiding educational pursuits in meaningful directions. Broadly the failure of intellectual vitality is on two fronts (a) the failure to show originality and significance in ideas and (b) the failure to provide cultural and moral direction. Academic originality and moral-cultural direction are both of supreme importance in a country that has witnessed a good deal of discontinuity throughout most of its history and is still beset with the dilemmas arising from cultural philistinism under alien, colonial regimes. In fact this so called academic colonialism has continued even after Independence when a greater input from various and after conflicting educational experiences has introduced serious distortions and disruptions in our educational system. Most of these aberrations arise from lack of coherence and vigour in our educational system, but the thoughtless open door policy has only aggravated our own confusion.

Much has been written on the theme of 'modernization' and the nature of response by developing countries' to the stimulus of western learning and technology. The academic profession in India has been subjected to various pulls, and scholars have been torn between the numberless alma mater of their foreign education. The debate about the relative merits of western universities among Indian scholars has to be heard to appreciate the intensity of loyalty to their foreign alma mater—there is such academic and cultural subservience as exposes the hollowness of our own intellectual prentensions. And far worse is the cheap criticism of the western or American education without knowing about it and without developing intellectual creativity and integrity of our own. And much of such criticism is part of opportunist academic politics that usually corresponds with the demand of ideological or political stance of the moment. Altogether therefore the basic defect in our academic profession as well as cultural life is its rootlessness, its insignificance and its irrelevance to the objectives of our national development.

In the name of quality improvement, some experiments have been made by establishing new institutions, and introducing new methods or new syllabi. Some of these institutions have performed well as exclusive schools—Institutes of technology, management or medicine. But there also we have allowed the aid giving foreign countries to impose their own models on the academic programmes of these new institutions that have yet to integrate with the larger social and economic environment of the country. And while it was easy to import foreign models in areas of technology and management, a sizeable number of our engineers, managers and doctors preferred to leave the country for foreign lands. And while experiments with new models of education and exports of our technical experts went on, our erstwhile universities and colleges continued to anguish in the mud of mediocrity and false imitations. And it is here that teachers gave up—easy prey to societal and governmental pressures, and to their own petty-minded drive to achieve status without merit and performance. In the post-independence culture of quick climbing onto the bandwagon of successful operators in every field, the academics were not to be left behind. And that was their fall and their personal, moral and professional failure! Let us, however, admit that while there was a general failure of the academic profession, there was a double fall in that many of the brightest left the poor profession for more lucrative jobs, and those who stayed in the profession only let it down. The spectable of many college and university teachers—indeed the best of them—leaving their teaching job for civil service shows the poor rating of the academic profession in a country where one's status is determined by the perquisites of government service including the orderly and the vehicle. The decline in the quality and relative status of academics reflects the fact that an academic career is seldom the first choice of a young scholar. The bureaucrats as well as the society are aware of the fact; and the marriage market is an unmistakable testimony to the advantage that accrues to an IAS, a doctor and an engineer. What does an academic have to offer to his wife in comparision to the newly rich businessman, manager, engineer, doctor or the government officers? Thus when we talk of the failure of the academic, we must also realize who we are taking about.

It may be said that the academic enjoys inferiority of status even in western countries. In the US in particular society awards higher status to a successful business manager than to an academic egghead. I have however yet to know if in any other country than ours an academic leaves his university job to become a police officer! The decision about a career is not merely a choice of job or profession, but a reflex of the social values about the relative status of jobs and also of the individual's indifference as between an academic and a police officer's job. The visible signs of power are important in our culture and the academic suffers from his own moral failing and from the social rating of status that different jobs carry with them.

It is against this background that we should approach a comparative study of the academic life in India and the US. The two books under review, however, are not quite comparable in their objectives and study design. Ladd and Lipset focus specially upon the college faculty and their interest in politics and influence on society, and proceed with the assumption that 'The university has become the great legitimizing and certifying institution of contemporary secular societies (p.2). This is the classical function of a university in the modern world where university degree has been considered a passport to a job. It is, however, a matter of deep concern as well as an indication of the state of affairs afflicting our universities that their power of certification is subject to serious doubt and challenge as most employers hold their own recruitment tests for most elite jobs. However besides the powers of certification there are other functions which have political consequences by giving the academic community a special satus and role in the societal and governmental decision-making. As Ladd and Lipset point out, "The politics of the university world may be derived in part from a consideration of three functions which institutions of higher education have fulfilled, particularly in modern times; socialization in the sense of the transmission of traditional values whether secular or religious; innovation and scholarship, the support for creative individuals in the sciences, humanities, and social sciences who are concerned with advancing the frontiers of knowledge and artistic work; and community services, the application of the knowledge and skills concentrated in the university to achieve objectives set by lay powers, including both government and private institutions' (P. 10). Thus the professor's influence in society is due to his role as a teacher, scholar and a consultant. A point that the authors emphasize is the fact that the political weight of the American academic has been on the progressive, liberal and leftist side' (P. 14). This orientation is due primarily to the intellectuality of the academic profession that fosters and favours an independent and critical attitude towards matters of public importance. This also explains why more American academics have been Democratic than Republican in their party preference.

The proliferation of disciplines and the changing character of new fields of study and the resultant interests and outside affiliations have been responsible for deep cleavages in the American academy. Faculty positions on the liberalism-conservatism scale by discipline show that Social Sciences, Humanities, Law and Fine Arts are more liberal than all the faculty, whereas agriculture, business and engineering are much more conservative than all the faculty (Table 10, p. 60).

An aspect of the American scene is the extreme use made of the expert consultancy by public and private institutions. In this respect the impact of the social and physical sciences is great, but the social sciences enjoy greater influence on public policy area. It bears quotation that "Important as teaching would seem to be, the influence of social scientists on public policy is not restricted to the classroom relationship. Increasingly over the last several decades, academics have been involved in the formulation of policy—served as consultants to those charged with making public decisions, authors of studies purporting to analyze the sources of social ills and to prescribe solutions, and generally (and probably most importantly) as architects of the 'scientific' construction of social issues' (P. 94). The direct and considerable influence of economists is noticeable in the US as well as many other countries including India. Economists man the Department of Economic Affairs, Planning Commission and Reserve Bank of India as they sit on the Council of Economic Advisors in the US. But this comparison is exceptional; the academic influence on governmental decision-making or on policy is much less in India than in the US.

Whether, however, academic consultancy or direct participation in public policy area is desirable is problematic. First, the intellectual's primary function of social criticism is impaired by his direct participation in public policy. The question therefore arises whether it is desirable for the intellectuals and academics to become part of the establishment. Secondly, policy decisions are political decisions that require more than theory or ideology and are best made in the light of practical experience and political judgment. The conduct of foreign policy decisions by the American government with academic experts serving as National Security Advisors or Special Assistants to Presidents has not ensured wise and sound policy decisions. The best and the brightest—academic and non-academic have goofed as much if not more in the rough and tumble of practical policy decisions as the politicians. The Bay of Pigs, Vietnam and Tehran have exposed gross inadequacies of American understanding of foreign policy issues in spite of all the academic expertise available to the American government. This part of the technical expertise and academic consultancy indeed appears to be the bane of the American reliance on academic know-how to resolve political issues.

While such baneful consequences follow from the surfeit of academic affluence in US, part of the problems facing the academic world in India would appear to follow from the intellectual and moral as well as material poverty. A Madam Curie working for her research in extremely indigent circumstances is not daily occurrance anywhere, but let it be said that our academics have chosen the path of least resistance and are more interested in gaining positions and promotions than in honest down-to-earth study and research. I have already dwelt on the failure of the academic, but let me emphasize that much of the malaise on the campus of college or university, stems not only from the intellectual poverty but also from downright moral delinquency. What have not our academics down to bring the academic life in disrepute and contempt! From admission through teaching, research and examination there is a lie in the soul of our academics who cannot even be accused of betraying a trust that they do not recognize as theirs, and who can be simply dismissed as being in the wrong profession. But for the grace of God, many of them did not deserve better than selling tooth-powder at a bus terminus!

Having done justice to my own class of academics, it is only fair that similar justice be done to those who plan and control the educational system of India. Education being under the regulation of the government, the universities and colleges have been increasingly transformed from temples of learning into arenas of political control and patronage. There was a time when Vice-Chancellors and Deans and Principals enjoyed respect as both academic and community leaders. Now it is hard to think of a job more strenuous than that of a Vice-Chancellor as a university campus has become almost impossible to govern due to the deterioration in the quality of students and faculty and due to their excessive politicization. Here the distinction must be made between the political orientation and influence of the academic about which Ladd and Lispet talk about and the politics of our own students and faculty. Our politics has seldom to do with standards and conditions of academic life or the merits of public policy or national issues and is mostly focused upon manipulation for jobs and loaves and fishes. Admissions and appointments, examinations and research, all are polluted with political trickery and, literally, nothing is sacred. Also the havoc that the educational planners and policy makers have done to education may be illustrated with reference to medical education.

According to a study by World Health Organization, India in over producing physicians and surgeons, and has 80,000 more doctors then it can sustain. As reported in the Press (23.6.89). The study says: It is not clear whether the policy behind this rapid expansion was to compensate for migration losses, to cover better rural coverage by a massive overspill, or merely a response to a large demand for medical education which was completely unrelated to the economic demand for physicians! The study, according to the Press Report, found a contradiction between the government's official position to providing health care for a large population and the futility of trying to do with more and more of the unsuitable and expensive physicians now being produced. The WHO study also maintains that the values imposed by the Indian Medical Council were international and not adapted to the needs of the country. There is clearly something basically wrong with the politics of education planning in over country.

Against this dismal background, a book on the Indian academic profession is welcome. Suma Chitnis and Philip Altbach, both professors of education, have collected a number of studies separately done on different aspects of academic profession in different places of India. Except a study of Rajasthan University Teachers by Yogendra Singh and another of engineering teachers in IITs other articles deal with college teachers, a point which receives great emphasis by Altbach who makes the distinction very sharp by saying that "University faculty are visible, vocal and influential. They are the Brahmins in an academic system where college teachers are Sudras". (p.6). This is rather sweeping and even false. Professors and heads of departments in a university certainly wield considerable prestige and even influence but the fate of university teachers in general is generally little better than that of the college teachers. There is very limited scope for faculty participation in policy decisions and the professors are the key persons in academic councils, senates and syndicates. In trying to concentrate on the bottom of the academic hierarchy, Altbach is only seeking to pick up the underdogs of the academic world and highlight their many deficiencies including lack of autonomy in a hierarchical academic system with restricted mobility. We have readymade gems such as the following: 'The Sudra College teacher, particularly in a rural or suburban college, seldom has the opportunity to reach the nirvana of the 'Brahmin' university professor. The caste analogy can be carried further by noting that most college teachers have little desire or aspiration to move to a different level of the system. Somehow, their role is established and mobility seems not only unattainable but even unthinkable' (P. 12) 'College teachers are seldom creative individuals' and they seldom produce research or creative writing'. Now these are quite a mouthful of facile observations. The academic system is hierarchical everywhere, even in the republican America—and one wonders what is wrong with hierarchy provided of course there are opportunities for mobility. I think Professor Altbach forgets that the college and the university were designed to perform not necessarily identical functions: the university was meant for both teaching and scholarship, while the college was primarily and mainly for teaching. Such distinctions in role are not peculiar to India. Cornell University and Ithaca College are in the same town, but making comparisons between the two would be ridiculous. Most of our Indian colleges are like Ithaca College, and a host of other small town colleges in the US that do not match the major universities in their intellectual and material resources. And when Professor Altbach says that the 'College teaching community finds itself in a particularly difficult situation and that, as a result of many factors, it has not developed fully into a profession and has not contributed substantially to the broader intellectual life of the nation', I can only try in vain to recall any Ithaca College academic contributing substantially to the broader intellectual life of America. And if the Indian academic has failed as I have argued they have, the problem belongs more to the university professor as he and not the college teacher was given the status and the job of creative intellectual life. One could go on multiplying such examples and picking up argument with Professor Altbach, but I would like to conclude on a point of explanation. Altbach compares the academic hierarchy to the Caste, and suggests that the Hindu joint family culture plays an important role in the formation of institution's character. We would however like to ask the question whether the academic scene in the Islamic Republic of Pakistan or Bangladesh or even in Malaysia or Nigeria for that matter is different from the Indian scene. Reading an article by Morris-Jones on the state of Political Science in Bangladesh, one is forcefully reminded of a parallel situation in India.

Suma Chitnis deals with the present condition of academics in a more systematic, balanced and realistic manner. She first makes an inventory of the characteristics of a profession such as systematic, technical knowledge; motivation of the practitioners; and a sense of responsibility, solidarity and mutual support, and then she develops seven indicators in terms of which the status of an occupation or a profession may be assessed. The data for the study are based on an intensive study of the teacher role of the college teachers of the three of the most elite colleges in Bombay. The findings confirm the common perceptions about a college teacher, but are somewhat surprizing for elite institutions in Bombay: only 17 per cent have Ph.D. qualifications; 84 per cent do not read regularly in order to equip themselves to handle the syllabi they teach; only 16 per cent mentioned that they read daily; teaching is largely examination—oriented; and in the task of cultivation of a cultured elite and an educated leadership, college teaching has lost the position it once held. Suma Chitnis makes two observations which may serve to explain the fall in the standards of the academic profession: 1. With the expansion of higher education since Independence the number of college teachers has multiplied and the occupation has lost its exclusive status, and 2. among the constraints are those that restrict the autonomy of the college teachers.

One can see here the interplay of democratization and lack of academic autonomy. Democratization has resulted in the proliferation of colleges and in the expansion, in the size of students and faculty; and political pressures for favours in admission, examinations and appointments, thus lowering the intellectual, moral and professional standards. The lack of autonomy again precluded innovation, experimentation and creativity, and a sense of professional responsibility. The key elements are lack of autonomy and lack of responsibility. But the lack of autonomy is not merely due to the hierarchical structure of the university system but far more to the political and governmental environment. The control by management or by the government, political and bureaucratic, results in applying external sanctions that exploit and degrade the academic profession. Allowing for the failings of the academics, it is important to remember that external sanctions achieve nothing in a profession which almost by definition is inner-directed. In the ultimate analysis undoubtedly it is the genuine autonomy and responsibility of the academic that is the safeguard of academic and intellectual excellence. It is however not the narrow hierarchical organizational system but the larger societal and political-cum-bureaucratic pressures and interference that have led the universities and colleges alike down the road to degeneration. To highlight the difference between the university and the college, as sharply as Altbach does, is to put one's finger on 'the periphery of a peripheral academic system'. Suma Chitnis does well to refer to the constraints from the environment such as 'public pressure' 'inability of the economy to absorb the educated, and the rise of 'new occupations and employment opportunities which are superior to college teaching'. This is better than Altbach's 'Caste and joint family' explanation of the academic hierarchy and lack of autonomy.

The next two chapters by Rudolf C. Heredia are parts of a doctoral dissertation of the university of Chicago. It is not necessary to encumber this review with details of these two papers which focus on the social profile and the organization of college teachers in Bombay. However Heredia also refers to the question of autonomy: 'Within the structural constraints of an affiliating university, the professional autonomy of the academic generally has a rather limited connection. From regulated pay scales to prescribed syllabi we find that both the conditions of work are regulated and its performance standardized' (P. 88). A graduate student from Chicago may be pardoned for being struck by the very unAmerican phenomena of 'regulated pay scales' and 'prescribed syllabi'. Part of what has been described as the 'Good Syndrome' of Americans!

It is all the same important to note that the academics in India suffer considerably from apathy or alienation from their environment. As Jayaram and Sriramakrishnan in their paper dealing with the organization of the academic profession point out: "To start with, members are indifferent about joining the organizations and if they do so it is largely due to pressure or persuation from organization leaders who also happen to their colleagues in the academic leaders who also happen to be their colleagues in the academic profession. Having joined the organization, they remain indifferent and only marginally involved. Few teachers, other than those who are office-bearers and leader, concern themselves with the activities and affairs of the organization" (P. 126).

The book includes a competent essay by Yogendra Singh who undertook a study of academic role structure and modernization of the academics at the University of Rajasthan in Jaipur. Among his findings the important ones are the following: the upper caste recruitment exceeds 80 per cent (with only 0.4% from the lower castes and only 3% from the minority communities); the attributes of modernization as understood by majority of teachers are ideological —tolerance, understanding and co-existence-rather than structural egaliterian reforms, technological growth, industrial-urban adaptations in social relationship; and there is high moral among teachers in general, but higher moral among science teachers. This is not the occassion to comment on all aspects of the paper and I would like to make just one comment on this business of modernizations. Yogendra Singh says at the outset: 'The traditional social structure of complex societies was hierarchical, and recruitment into the teaching roles, particularly in India, was ascriptive; in India it was a preserve of the priestly caste, and higher education was open only to the upper castes. Education through modern universities suggests a transition from hierarchy to equality, from recruitment based on status to that based on achievement and professional competence; universalistic and achievemental values tend to predominate". (P. 135).

The compulsion to think in ideal types is so overwhelming among sociologists that even after repeated criticism of a false dichotomy between modernity and tradition, they do not give up the habit. The traditional social structure of complex societies being hierarchical is only a half truth, as if the modern is not, and the recruitment into teaching roles being 'a preserve of the priestly caste' is misleading except in the original Hindu tradition long disrupted by alien influences. It is true that the academics are recruited mostly from the upper castes and the 'modern' institution of university has not made a dent into the elitist composition of the academic profession. Even before the 'modern' university, the Kayasthas in many parts of the country rivalled the Brahmins in their academic supremacy and it was the long association of the Kayasthes with the Muslim administration that encouraged the development of a literature, but non-priestly caste specially suited for civil services and education. The shift from tradition to modernity has been too long and too incomplete and too insufficient to warrant Yogendra Singh's conclusion that 'education through modern universities suggests a transition from hierarchy to equality, from recruitment based on status to that based on achievement! There has been no substantial change in the upper caste dominance of the academic profession. At any rate universities like other institutions are a mixed bag of traditional and modern elements and its is a very slow change that is taking place in the shift from 'status to equality'.

What is, however, more serious in Yogendra Singh's discussion of modernization is the omission of the tension between 'ideological' modernization and 'behavioural' traditionalism, and the crucial need for finding indigenous roots of modernity. Equal dignity and opportunity for all is more a god to be worshipped, move for lip service than for practice. The values of tolerance and coexistance, behavioural components of Yogendra Singh's 'modernity syndrome' suits the modern as well as the traditional elite. The illiterate Bhangi is of course tolerated but denied equal dignity and oppotunity to improve his life chances. There is however a lot in our culture and tradition besides hypocricy that needs to be changed. And yet modernity that has no indigenous sources is hardly wholesome and durable. The compulsions of modernity must come from our own society and culture, and the academic profession owes to itself and to the country to develope an educational system that fulfils the needs of social change and yet makes every Indian proud of his country and culture. Also the aim of the academic profession is not merely to impart learning but to foster character., a sense of moral and social as well as intellectual responsibility, leadership and public concern. The academic profession is facing above all the crisis of character and sense of values. The Brahminical tradition of selfless dedication to the values of instruction and guidance, an important legacy of our cultural tradition needs to be preserved and made the ideal of all academics, the modern Brahmins, the functional Brahmins and not only the twice born who wear the sacred thread. Preserve the value of selfless, dedicated pursuit of learning and social service (tradition), and make it universalistic (modern). Before the West caught us, we might have been poor but we were not sick.

Now we are sick amidst all the modern gadgets and computer techniques, and well stocked libraries and well equipped labs. Whether it is the concepts or the methods, the values or world views, we are captives of alien forces; there is nothing organically indigenous; no pride in ourselves; no integrity and no responsibility. Our one brave effort at Basic education proved a failure the university education is another force. The Christain missionaries take care of the schooling of the children of the elite; these children man the services and the professions, they run the country as a colony for our elite; and in making all this possible the academics have an important role! After all, it is unfair to expect more in a country with half the population living below povertyline; half the school going children denied even primary education (Soviet Russia achieved 90% of literacy in 22 years after the revolution; we have not achieved more then 30% even in 32 years). Survival is important and we have managed to keep our profession alive; but we have not been kicting and making an issue of a cultural revolution of our own. Yogendra Singh found that the teachers' morale was high—but morale can be kept high on Pan and Zarda, drinks and drugs, TV sets and foreign trips rather than professional competence, academic excellence, or integrity of character. We academics need to shape up or shape out.

Ali Ashraf

Education and Jobs by S. Parmaji. Leeladevi Publications, New Delhi, 1979, pp. 118, Rs. 45.

The book is based on the author's research report which was financed by the ICSSR. There is some hint that it has grown out of his Ph.D. thesis earlier submitted to Indore University. It aims at diagnosing the illness of the higher education sector. The author asserts that general higher education of a non-professional type generates aspirations for white-collar jobs in its clientele—for which it neither prepares nor trains them. In the event, the national economy fails to absorb them in any gainful way. There is thus a devaluation of academic credentials and the minimum qualification for a job is constantly on the rise. Employers seem to have the conviction that a person with a higher degree is likely to be more productive compared to his fellow workers who have terminated their schooling earlier. The book aims at exploring how far this conviction is close to reality. Hence there is an effort to study the relationships between education and certain job-correlates such as job-aspiration, job-satisfaction and job-efficiency of non-professional (clerical) job-holders.

In Chapter 1 the author notes down the objectives, assumptions and hypotheses of the study together with a review of the existing literature. The review turns out to be extremely disappointing both in terms of quality as well as quantity. The author has not even tried to analyse the literature. When one expects him to provide us with a diagnostic outlook towards the illness that higher education suffers from, he simply 'cites' opinions of a couple of authors in a style which is usually followed by the undergraduate students as a customary ritual. Studies referred to have been accepted at their face value *sans* effort to assess validity and propriety. He has concentrated exclusively on 'recounting' the findings of past studies and has stopped short of giving the reader his own view on them explicitly or for that matter even implicitly. Further, a large number of the studies cited have not been documented at all. It does not tell us anything about the place and the form in which the concerned material was published. Quantitatively speaking too, the survey is neither extensive nor up-to-date. His bibliography and references consist mainly of the material published in the fifties and the sixties. However, one also finds stray references to some studies done in the early seventies. The author is, perhaps, unsure of the state of the latest research tn this area. Else, it is also possible that the present study was completed quite a few years back and it was published last year without being brought up-to-date systematically. The major problem with this chapter, as with the others also, is the absence of any analytical frame whatsoever. As a result the book has become highly descriptive and non-technical and the style further suffers from looseness and repetitiveness. Everything—objectives, assumptions, hypotheses, tools, findings etc.—have been repeated which should, and could easily, have been avoided. All these factors make one hesistant in accepting the author's claim about the book being a piece of serious academic research.

In Chapter 2 the author has elaborated the methods and procedures of his study. A stratified random sample consisting of 641 members was drawn out of the clerical staff working in the various branch-offices and regional/district headquarters of the State Bank of Hyderabad and the Life Insurance Corporation in Andhra Pradesh. The sample does not appear to be representative. Educationwise distribution of the sample is highly skewed in favour of the graduates (who form 71 per cent of the sample). There were only 114 (18 per cent) members with matriculation and the cohort with post-graduation were merely 73 (11 per cent). Organisationwise the sample has been drawn predominantly (524 subjects out of 641) from the two LIC divisions located at Hyderabad and Machlipatnam. Given the nature of the present study, the sample should have been representative not merely of these two organisations (LIC and SBH whose occupation is roughly the same) but also of all the other occupations and of the people working in them. A cross-sectional sample representing various types of job-environment is a minimum pre-requisite for any worthwhile generalisation of the results. No doubt there are always practical problems which act as constrants in drawing a systematic and statistically sound sample, but when one is making a comparative study of job-efficiency and job-satisfaction of the employees with differing education background with a clear view of drawing specific implications for educational policy etc., one would prefer a sample reasonably representative of all the relevant dimensions.

In Chapter 3 the author deals with the same issue as in Chapter 2 but concentrates exclusively on the job-satisfaction-questionnaires. As a background, he 'recounts' the well-known theory of satisfaction-dissatisfaction bipolar continuum as well as the two-factor theory where motivation and hygiene are hypothesized as two separate unipolar continua. From here he goes on simply to count the studies which supported (partially or otherwise) and which did not support the two-factor theory. This is more in a style of counting the heads for and against the issue. After counting the heads, he finds that the number of studies which (voted and) supported the two-factor theory is less than those which did not. Following the democratic norms, he declares that the two-factor theory is defeated by a simple majority. This alone provides him the sufficient ground to conclude "that the research evidence is abundantly in favour of the traditional satisfaction-dissatisfaction bipolar continuum." (p. 54). Does one need to point out that the acceptance or rejection of a theory by the academic world depends, one hopes, not on counting the heads but, perhaps, on the relative merits of the theory itself?

In Chapters 4 and 5, the results of the empirical analyses have been presented and discussed. Chapter 6 provides summary and conclusions. In short, the main findings are as follows: (i) higher the education, higher the job-aspiration; (ii) higher the education, lower the linking for physical labour and also, for occupations like industry, business, trade etc.; (iii) higher the levels both of education and pre-job job-aspiration, higher the dissatisfaction as clerks; (iv) higher the education, higher the job-efficiency (but efficiency rises only up to the point of first-degree level); and (v) length of service, compared to that of schooling, is the better predictor of clerical efficiency.

The main findings of the study are not new—the conspicuous absence of any theoretical underpinning of the book only makes the findings unnecessary to recount.

Shrawan Kejariwal

Higher Education: Crisis & Support (An International Perspective) Conference Papers Number One. International Council for Educational Development, New York. Pp. 134.

In India the Draft of the old Sixth Five-Year Plan (1978-83) had envisaged significant increase in allocation of funds for primary education and some reduction, though not proportionately, in the share of higher education. The trend is not peculiar to India. "The erosion of public support for higher education" is, James A. Perkins observes in the foreword to the book under review "a World-wide phenomenon". A conference was convened by the I.C.E.D. in 1973 to 'explore ways in which higher education in general and more specifically the University must respond to the present crisis of organization, relevance and finance. Thirteen papers were selected for publication which it is claimed present "an international perspective". But among the twelve persons invited from eight countries only one, the delegate from Ghana, represented the whole Afro-Asian World. Seven out of thirteen papers are from U.S.A. and there is hardly any reference in the book to higher education in India, U.S.S.R. and China.

In the Foreword there is also an explicit complaint against comparative educationists: "For a long time we have studied different educational institutions and systems without any qualms about comparing differences and similarities." Some contributors to this conference made no effort to get off the trail. Let alone 'comparison' even the 'description' is sketchy and perfunctory; although the seminar was organized at international level and the members "met five days a week for each of the three weeks". The quality of the papers is very uneven. In less than four pages Hellmut Becker gives an account of 'access to higher education in Germany'. It reads like a portion from a book of general information published for the benefit of tourists.

Observations made by Prof. Alex Kwapong, Vice-Chancellor, University of Ghana, about 'special problems of new Universities' are peripheral. The earlier part of his essay raises some expectations. On the whole, there is more rhetoric than enlightenment. He concludes: "And the principal problem confronting the universities within these less developed countries is how to reconcile autonomy with accountability, and academic freedom with relevance and responsibility. Therein lies the challenge". At the beginning he writes, "I shall have, inevitably, to draw mainly upon my African and, more specifically, on my Ghanian experience". But he does not give an inside view of how and to what effect the problem of reconciling was tackled in Ghana. All that he says could be written by someone sitting in New York or London without having ever visited Ghana or any part of Africa. Martin Trow is very perceptive and more specific when he writes about 'Relations between occupational structure and higher educational systems. He thinks much of the confusion in universities is a consequence of the "Carryover of elite conditions and assumptions into the phase of mass higher education". The 19th Century colonial experience in dealing with surplus graduates, for example, "sending them to dignified and honourable posts overseas" is not, in his view, valid to-day.

The two historical examples of the "Relation of Higher Education to Society" by R. Freeman Butts deal with "opening up and changing" of higher education in England from about 1550 to 1650, and reform of higher education in America from about 1750 to 1850. Much erudition is indeed in evidence. But he exaggerates while writing about "the role played by higher education in England during this period in preparing students for jobs in the society, especially jobs for the professions and in industry". Even in the 19th century, university education in England was, according to Lord Butler, "a means of acquiring wisdom and satisfying curiosity, not an instrument—there was no great need to put scholarship to any practical use." By the time of the War of Independence England's North American Colonies had nine universities to England's two only: Oxford and Cambridge. And upto the middle of the 19th century English universities had much closer links with the religious than with the economic reorganization of English society. During the 18th century also Oxford and Cambridge were 'nurseries for gentlemen' and the examinations were slight even by the end of the century. In 1868 Mark Pattison wrote: B.A. has nothing but a social value; it showed that a graduate afforded money and three years "among gentlemen doing nothing as a gentleman should". In fact when reforms came during the XIX century even when reforms were introduced the universities opposed and retarded these instead of welcoming and promoting.

Drawing illustrations primarily from the United States, Ernest L. Boyer and Burton R. Clark have contributed two papers each. Nevertheless their generalizations "cut across national boundaries", and students of comparative education who are interested in the changing patterns of access to higher education, special arrangements for special groups of students, institutional diversity, new organizational principles, public perception and the changing status of the professoriate will find these useful in the context of many problems of immediate concern to them. The last section of the book " Research on Higher Education" is brief but substantial. The other sections are: historical perspective; access, higher education and employment, autonomy and systems; the professorsiate.

The content as well as the style of some papers show that the delegates could find time only to *speak* at the seminar, not to *write* papers, which though a little disjointed are not irrelevant to the inclusive rubric: High Education: Crisis and Support. The book is useful and informative, though not stimulating.

R.K. Yadav

Our Contributors

A. Vizaya Dattatreya Sarma is lecturer in History, Maharajah's College, Vizianagaram. Published articles in various journals.

Ali Ashraf is Professor of Political Science at Jamia Millia Islamia. He was awarded Smith-Mundt and Fullbright fellowship for study at Cornell University. He was UGC and ICCSR nominee to Iraq and France under Cultural Exchange Programme.

Amitabh Kundu is from the Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi.

G. Subramania Pillay is Reader in the Department of Education, Madurai Kamraj University, Madurai.

John Eggleston is from the Department of Education, Keele University, Staffordshire, Britain.

M.K. Chandrashekaran is working in the Unit of Animal Behaviours, School of Biological Science, Madurai Kamraj University, Madurai.

M.R. Bhiday is in the Department of Physics, University of Poona, Pune.

M.V. Ananthakrishnan is Faculty Member with the National Institute for Training in Industrial Engineering, Bombay. His areas of specialisation are Educational Technology and Science Education. He has published and/or presented more than 45 papers in international/national journals and conferences.

Khalid Ahmed Kazi is in the Indian Institute of Technology, Bombay.

Maithreyi Krishnaraj is from the SNDT (Women's) University, Bombay.

Maureen Woodhall is Research Associate at University of London, Institute of Education. Visiting Research Fellow, University of Lancaster. Consultant, Organisation for Economic Co-operation and Development, Paris. Consultant and Member of Course Team (ED 322) Open University.

Moonis Raza is Professor of Geography and the Head of the Centre for the Study of Regional Development at the Jawaharlal Nehru University: has Teaching and Research experience of about 30 years in Aligarh Muslim University; The Regional College, Srinagar and the Jawaharlal Nehru University: has been associated with the examination reforms in all the three Universities.

O.B. Sayeed is from the Indian Institute of Technology, Powai, Bombay.

P.K. Bose is the Centenary Professor and Head of the Department of Statistics, Calcutta University, since 1942. Served as the Pro-Vice-Chancellor for Academic Affairs, Calcutta University during the period from September, 1968 to September, 1976.

Philip G. Altbach is Chairman and Professor of Social Foundations of Education at the State University of New York at Buffalo, where he is also Professor of Higher Education. He serves as editor of the Comparative Education Review. Among his recent books is The Academic Profession in India (co-edited with Suma Chitnis).

R.K. Yadav is UGC Retired Teacher, BHU, Varanasi.

Rais Ahmed, formerly Professor of Physics, Aligarh Muslim University 1963 onwards, now working as Vice-Chancellor Kashmir University. Has been member of the UGC 1973-76 and keenly interested in researches in the field of education, creativity, and science and technology. Was Director, NCERT 1974-77.

Ravi Kumar Varma is Lecturer in Social Psychology at International Institute for Population Studies—Deonar, Bombay.

Rehana Ghadially is from the Indian Institute of Technology, Powai, Bombay.

S.P. Mukherjee is Joint Director of the Project, Department of Statistics, University of Calcutta, Calcutta.

Shrawan Kajariwal is in the Zakir Husain Centre, Jawaharlal Nehru University, Delhi.

U.L. Narayana is working as Lecturer in Maharajah's College, Vizianagaram. Published articles in various journals.

V. Subramaniam is Special Officer for English, Office of the Director of Collegiate Education, Madras.

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Journal of Higher Education
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Future Critical World Issues in Education: A Provisional Report of Findings*

PHILIP H. COOMBS

In the developed countries, which already had universal primary schooling, the main effect of the expansion was to "flesh out" the educational "pyramid" at the secondary and especially the post-secondary levels. In the wake of World War II most European countries undertook to transform their narrow "elitist" systems into "mass" systems by multiplying their size. The United States and Canada and certain other developed countries that emerged from the war with semi-mass systems of secondary and higher education—much more diversified and flexible than the European systems—set about expanding them still further and broadening their access to adults as well as to youths.

The post-war evolution of the educational structures in most developing countries, contrary to initially expressed intentions, took a remarkably different path than that followed historically by today's developed countries. The latter countries built their educational pyramids from the bottom up. By the late 19th and early 20th Century most of them had virtually established universal primary schooling but still had extremely small secondary and higher educational participation. These levels were gradually enlarged over the next half century and, after the war, much more rapidly. The 20 year expansion targets adopted by the ministers of education of Asia, Africa and Latin America at UNESCO's landmark regional conferences in the early 1960s envisaged a similar strategy of building from the bottom up. The goal was to complete universal primary education (UPE) within 20 years, meanwhile building a modest core of secondary and higher education that could be fleshed out later.

In fact, however, the opposite strategy was followed in most developing countries. Almost without exception they expanded enrolments at a much

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*Condensed from the monograph of the author. Published by International Council for Educational Development, 1981 (USA).

Table 1

GROWTH OF ENROLMENTS BY LEVELS, 1950-1975

		Number Enrolled (million)			*Index of Growth* (1950-100)		
Region	*Year*	1*st level*	2*nd level*	3*rd level*	1*st level*	2*nd level*	3*rd level*
Europe &	1950	74·6	15·6	2·53	100	100	100
USSR	1975	84·9	45·4	12·41	114	291	491
North	1950	23·8	6·9	2·4	100	100	100
America	1975	29·3	23·1	12·0	123	335	500
Africa	1950	8·5	0·75	0·07	100	100	100
	1975	44·8	8·50	0·88	527	1,133	1,257
Asia	1950	53·3	12·7	1·0	100	100	100
	1975	159·6	61·6	8·5	299	485	850
Latin	1950	15·4	1·7	0·28	100	100	100
America	1975	56·9	12·4	3·61	369	729	1,289

Source: UNESCO Yearbook.

faster rate at the top and middle levels than at the base of the system. (See Table 1). As a result, by the end of the 1970s the majority of them were not yet within striking distance of UPE, and at the present rate many will not make it by the end of the century. But they have already substantially overshot their secondary and especially their tertiary level expansion targets.

Today's educational structures in most developing countries, in addition to being top-heavy, are also very lop-sided geographically. In effect, they have *two* educational systems: an *urban system* that is already close to universal primary schooling in many instances (except for slum children) and has impressively high secondary and post-secondary enrolment ratios compared to 15 years ago, and a *rural system* typically composed of thinly spread (often incomplete) primary schools, with few if any secondary schools and no higher education whatever above them. The practical effect of this dual system is that rural children, who often comprise 70 to 90 per cent of all the nation's children, have a drastically smaller chance than their urban counter-parts of entering and completing primary school, much less going on to secondary school or the university. Surprisingly, these urban/rural inequalities are even greater in a number of Latin American countries, despite their higher per capita incomes and comparatively smaller rural populations, than in many poorer countries of Asia and Africa.

These huge urban/rural educational disparities are part of a much broader imbalance between urban and rural economic and social development which underlies the heavy concentration of extreme poverty in the rural areas of most developing countries. Helping to rectify these gross urban/rural inequalities and meeting the basic needs of the poverty—stricken rural majority is clearly the central challenge to educational policy in the 1980s in many developing countries.

THE CRITICAL ISSUES

The basic trends and developments of the recent period have far-reaching future implications for all levels and types of education throughout the world. Against this broader context, we now narrow our focus to examine how these forces are likely to impinge on post-secondary education in particular—always bearing in mind that higher education is an integral part of a larger educational complex set in a dynamic socio-economic milieu and therefore cannot be successfully diagnosed in a vacuum. Specifically we will examine these critical issues relating to: (1) growing learning needs and educational demands, (2) employment prospects for graduates, (3) costs and finance, (4) educational inequalities, (5) planning, management and governance, and (6) international cooperation.

Adjusting to the Changing Demand

It is customary to project the future demand for higher education in simple quantitative terms, based on the size of the upcoming "college age" population that will be emerging from secondary school. These numbers, however, and this definition of higher education's clientele, omit two important dimensions of the reality. First, they ignore the important learning needs and interests and the large *latent* demand of numerous potential "unconventional" students who have not customarily been served by most higher educational institutions. This group will merit much greater attention in the 1980s, especially in developed countries where the in-flow of "traditional" full-time students from secondary school will be declining.

Second, what really counts in the end is not just the quantitative dimensions but the *qualitative* dimensions, judged not simply by traditional "quality standards" but by what is actually being taught and learned today and how well it fits the present and future needs of the particular students and society. These qualitative questions were often brushed aside during the earlier rush for quantitative expansion but they are now coming home to roost in ever-increasing number and will have to be faced up to in the 1980s.

Since the demand trends for higher education in the future will be very different as between developed and developing countries—due especially to differences in their demographic trends and their differing enrolment ratios—it will be useful to examine them separately.

The Outlook in Developed Countries: Because of the declining "college age" cohort, combined with a recent downward trend in the proportion of qualified secondary school graduates opting to move directly on to higher education, enrolments of "traditional" type students are expected to stabilize or decline in most developed countries during the 1980s.

This prospect of "stagnation", together with tightening budgets, diminishing public enthusiasm, and a softening employment market for graduates, has created a deep malaise in many higher education communities—especially in universities and degree granting colleges that are likely to feel the greatest pinch. The malaise has been exacerbated by recent sharp cuts in programs, in the hiring of young instructors and in the promotion prospects for existing young faculty, all of which jeopardizes the future intellectual vitality and morale of these institutions.

But there is also a brighter side to this otherwise gloomy outlook. For one thing, with the pressures for expansion now abated, higher educational institutions—particularly universities—have a rare opportunity to catch up on some important unfinished business. They can now turn their attention and energies, for example, to scraping off useless old barnacles from the distant past; to reconsidering and clarifying their basic purposes and objectives and using these as criteria for critically evaluating their actual performance; to updating and adapting the curriculum to fit the changing needs of an increasingly diversified student body; to lifting sagging quality where needed; to experimenting with new and more cost-effective teaching and learning strategies; to rejuvenating and redirecting faculty research; and to abandoning old attitudes, habits, and red-tape that stand in the way of much needed changes and innovations. These are not only "good things" to do but *essential* things to do if universities are to remain a vital force in their society and to avoid becoming sociological museum pieces.

Universities and other higher institutions in developed countries also now have a rare opportunity to reach out beyond their traditional students to serve the important learning needs and interests of many persons who have been neglected or excluded in the past—including, for example, women, members of lower socio-economic and ethnic groups, and many older youths and adults who would like to resume their education, whether to earn a degree or simply to take selected courses of particular interest and value to them.

In order to serve this larger and more diversified array of learners, however, higher educational systems must become more diversified themselves. This is the *sine qua non* for moving further toward mass higher education—as the contrast between American and Western European experience demonstrates.

Historically the American higher education system has always been much more diversified and has served a much larger number and wider range of students than the old "elitist" systems of Europe, which adhered to uniform national "standards", were extremely competitive and selective, and served only a small and largely privileged fraction of the age group. Since World War II enrolments and enrolment ratios in both sets of systems have increased dramatically, but in different ways. In most Western European countries, the expansion centered primarily on universities, though in most countries non-university institutions were also expanded and, in some, new ones were created (e.g., the polytechnics in the UK, the ITUs in France, and the Fackhochschule in Germany).

In the United States, by contrast, the largest share of the total increase was in 4-year and 2-year colleges having widely varying programs and standards, though university enrolments also expanded substantially.* Moreover, out of the total of 11·26 million students enrolled in all U.S. higher education in 1978 (compared to 3·22 million in 1960), 4·59 million were studying part-time. By becoming increasingly diversified in the post-war years, the U.S. higher education system succeeded in activating and catering to a tremendous *latent* market of interested learners who would have remained unserved by a less diversified system. It also goes for toward explaining why the participation rate of the U.S. population in post-secondary education is nearly double that of Western Europe.

The post-war experiences of Australia, Canada, New Zealand, Japan, and the Eastern European socialist countries have had much in common with the U.S. experience. They all evolved "mixed" systems of higher education, offering a variety of higher education options to different audiences and most of them have also attracted many "unconventional" and part-time students. This same trend has lately been gathering strength in Western Europe. Sweden—long the big exception to the general Western European pattern—adopted a higher education reform in the 1970s that abolished the traditional dichotomy between university and non-university institutions and strongly encouraged all of them to cater increasingly to "recurrent education" students.

Higher education in the Eastern European socialist countries and the USSR is also highly diversified, in two respects: first, they have a variety of specialized higher institutes apart from the universities and, second, a sizeable percentage of the total enrolments is made up of "unconventional" students (part-time evening and correspondence students) who can earn a regular degree. Although this percentage declined in the 1970s from the peaks reached in the 1960s, it is still sizeable.

The Soviet higher education system, though somewhat different than the others, has tended to set the pattern. As of 1977-78 there were 861 higher education institutions in the USSR, of which only 63 were universities, the rest being specialized institutes in the technical (engineering), pedagogical and other applied fields. Total higher education enrolments grew slowly in the 1970s, at an average of only 2 % a year compared to 10 % in the 1960s. Of the total of 5 million enrolled in 1977-78, just under 2·8 million (55 %) were full time day students. Correspondence—extension students accounted for 32 % and evening students for 13 %. The latter two categories accounted for 38·5 % of the 752,000 degrees granted in 1977-78.

The potential demand for recurrent and part-time higher education of various kinds can be expected to keep expanding in all developed countries as the result of new technologies and types of jobs, shifts in employment

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*In the 10 years between 1967 and 1977, *university* enrolments in the U.S. grew very slowly, from 2·6 to 2·8 million; *4-year college* enrolments rose morerapidly, from 2·8 to 4·5 million; but *2-year-college* enrolments zoomed rom 1·5 million to 4·1 million, raising their share of total higher education enrolments from under 22 per cent in 1967 to nearly 36 per cent in 1977. These institutional differences make it very risky to compare higher education enrolment figures in the U.S. and Western Europe.

structures, improvements in the status of women, changes in social patterns and life styles, and increasing leisure time. Thus an important question for the 1980s, especially for Western European countries, is whether by further diversifying their higher education systems to serve a broader variety of learners they can resume their march toward mass education, which otherwise threatens to stall in its tracks well before the journey has been completed.

The Outlook for Developing Countries: The inescapable conclusions from the evidence cited earlier is that most developing countries will face severe problems and extremely difficult choices in coping with the growing demands for higher education in the 1980s and beyond. Powerful demographic and political pressures (the latter coming especially from middle and upper class urban families including many civil servants), will make it extremely difficult to put the brakes on further university expansion. Yet this is now a "must" in most developing countries if they are to deploy more public resources to expanding primary education in unserved areas and to developing other forms of much needed educational services, including a great variety of nonformal education essential to spurring social and economic development. Only in this way can these countries reduce the severe lop-sidedness of their overall educational system that is now seriously obstructuring their balanced national development and perpetuating gross social inequalities that will increasingly threaten their political stability.

One of the central questions for the 1980s is what the universities in these countries can do and would be willing to do, consistent with their basic functions, to contribute effectively to the realization of the new development goals that evolved in the 1970s—especially the crucial goal of broadscale, integrated rural development aimed at improving the lot of the poor rural majority. Cynics would argue that these urban and Western-oriented academic institutions are hopelessly incapable by their very nature of contributing to the transformation of lagging rural areas and to helping the poor. The cynics may be partly right, but there is evidence to suggest that they are at least partly wrong.*

Most developing countries have concentrated their higher education development efforts on creating and expanding universities and other higher institutions modelled after foreign institutions. Thus they now have an even larger task than the developed countries of adapting these institutions to better fit their own needs, conditions and cultures and their very limited resources. They too need to diversify their systems and to find appropriate ways to serve the important and constantly changing learning needs of somewhat older, unconventional students who are already playing significant roles in their government, economy and society—though it would obviously be premature at this stage to strive for "mass" higher education. Many

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*See for example the case studies of a number of developing conntry universities that have struck out in useiul new directions in : K.W. Thompson, et. al., *Higher Education and Social Change* (Praeger) 1977, based on an ICED project.

countries have already taken significant steps toward such diversification, but it appears that few have yet gone nearly for enough.

Fading Employment Prospects for Graduates

The phenomenon of the "educated unemployed"—a term originating in India in the 1960s that also applied at the time to Egypt and the Philippines —spread like wildfire through both the developed and developing world in the early 1970s, creating deep personal anxieties and explosive political tensions.

Within the *developed* world the psychological and political repercussions were especially strong in Western European nations, for this was the first full scale confrontation between their newly "massified" secondary and higher education systems and the employment-generating capacity of their economy. The problem was made worse by the traditional rigid linkages (under the old elitist system) between specific educational credentials and specific job openings (especially in government and in the education system itself), and because student expectations were still wedded to these now obsolete relationships. In the United States and Canada the problem was worrisome but less explosive because credential linkages were relatively less rigid and there was a long tradition among students of "taking the next best thing available," at least temporarily, if the job of their first choice was not available.

Different diagnoses and prescriptions came quickly from different quarters. Many placed the blame for unemployment squarely on the universities for producing "unemployable" graduates-- the implicit (and dubious) premise being that if the students had been taught more "practical" knowledge and skills the employment market would have automatically absorbed them. The recommended solution that followed from this diagnosis was to salvage these "unemployables" by recycling them through special crash training programs of a "practical" nature, or by interning them in private enterprises (largely at public expense) to get some training and experience. A number of developed country governments have been trying this out, thus far with questionable results.

A quite different diagnosis, a favorite among manpower economists, was that the higher education system had reached excess production in relation to the economy's needs, hence the obvious solution was to throttle back educational production. Some of these same economists, back in the 1960s, had been staunch advocates of larger education budgets as "a good investment in economic growth," but now they were changing their tune.

Meanwhile the educators themselves, finding it hard to believe that any nation could really become "over-educated", or that landing a first job was the primary purpose of education, were caught in the middle trying to keep their institutions afloat in a turbulent sea of mounting public criticism, declining confidence and tighter budgets.

The comparable problem was approached more methodically in the centrally planned and managed economies of Eastern Europe, where man-power planners are taken more seriously. The throttle was set back on the further growth of higher education enrolments (especially of extra-mural students), as early as the late '60s in most of these countries (as already noted for the USSR) as soon as surpluses began to threaten. And in line with their "full employment" policy, wherever surpluses did materialize in certain fields, graduates were retrained and redeployed to neighboring deficit fields or, failing this, were placed in available jobs (as retail clerks, for example) that were well below their qualifications but better than no job at all. (Practitioners of planning in Eastern Europe are the first to acknowledge that fine-turning educational output to match projected manpower requirements, even in centrally planned socialist states, is far from an exact science; they envy the space scientists who can predict the course of a satellite with far greater confidence and accuracy.)

The growth of "educated unemployed" has been a much more disturbing problem in most *developing* countries because the employment market for graduates and their subsequent job mobility are much narrower, and because educational credentials are even more tightly tied to particular job levels and social status. Understandably, therefore, unemployed university graduates hold out as long as they can afford to, waiting for a job to turn up that fits their "qualifications" lest they be tagged and disadvantaged for life by settling for some available but "inferior" position at the start of their career. But since the recruitment of graduates by the private sector is generally very limited and since the innumerable civil service and high level teaching posts that several years ago were going begging for qualified recruits are now filled to overflowing, it can often be a long and frustarting wait.

The concentration of attention by analysts and policy-makers in the 1970s on the more immediate and politically volatile problem of *graduate* unemployment tended to obscure the impressive progress that nations throughout the world had made over the previous 20 years in strengthening their talent pools and in upgrading the whole population educationally-gains that can bring important long term benefits to the whole nation.

The point is vividly illustrated by the late Professor Fred Harbison's observation upon returning in the early 1960s from one of his early parachute missions to help introduce man-power planning in Africa (in this instance, Kenya and Tanzania). "It is simple to take inventory of the university graduates in these countries," Harbison explained, "you can practically count them on the fingers of two hands and in less than a week know them all by their first names." In the two succeeding decades the high level manpower pools in these countries have grown almost unbelievably, through a combination of overseas study and the greatly enlarged output of their own new universities. The number of graduates in 1980 alone from the Universities of Nairobi and Dar-es-Salaam exceeded the *total stock* of graduates in these countries 20 years earlier.

The same sort of rapid educational upgrading has been taking place also in the developed countries, but under the aegis of mass education it has spanned the entire population. In the United States, for example, the median number of school years completed by people aged 25 years or older rose from 9·3 years in 1950 to 12·3 by 1975. In the same 25 years the percentage of young adults (25 to 29 years old) who had completed four or more years of higher education rose from 8·1 per cent to 24·5 per cent.

The concentration of publicity on unemployment among university graduates has also tended to obscure the fact that they are merely a small part—and the least disadvantaged part—of a much larger "youth unemployment" problem. Those with the highest credentials got the headlines, but those with the lowest qualifications or none at all bore the main brunt of the burden. The actual unemployment rates among new university and college graduates in most Western nations in the 1970s was generally much lower than among those with lesser educational credentials. The worst that happened to most graduates was that they finally had to take jobs, at least temporarily, below their "qualification level". The resulting "bumping" effect was to transfer the unemployment impact down to the next qualification level and so on downward, with everyone moving down a notch (and every job moving up) until the fellow at the bottom with the least education was left *really* unemployed. The impact was (and still is) especially severe among disadvantaged ethnic groups (e.g., black and hispanic youths in U.S. cities).

This process of devaluation of credentials and upgrading of educational requirements for various types of jobs, all up and down the line, has been going on gradually for generations in all of today's more developed economies, whether capitalist or socialist. Over the past 75 years, for example, the educational qualifications for becoming an elementary school teacher, a college professor, a medical doctor, a licensed plumber or a machine tool operator have all risen dramatically in Europe and North America. This was an integral part of the national development process and one of the main reasons why labor productivity continued to rise, supporting increases in real wages and living standards. But the sudden acceleration of this normally gradual adjustment process in the early '70s—because of the increased influx of young people onto employment markets that were crippled by recession—made it a much more painful and disruptive experience. It was made especially traumatic by the gap between student expectations and the realities of a softenned employment market, and by inflexibilities and obstacles in these markets that were prejudicial to the hiring of inexperienced young people. In France, for example, most private sector firms had traditionally recruited few if any university graduates (who almost invariably aspired to employment in government, education, and the learned professions). But the underlying supply/demand imbalances that precipitated the famous "Events of May" in 1968 ultimately forced the private sector and the universities to come to terms, with the employers making their needs and preferences clearer and the universities broadening their curriculums. The new partnership, however, is still an uneasy one.

This education/employment adjustment process becomes increasingly important and widespread as a nation moves into mass secondary and higher education. It affects more and more people, often painfully, when the process suddenly gets accelerated. Yet there is no real substitute for this fundamental adjustment process, even in a centrally planned economy, as recent IIEP case studies in Eastern Europe demonstrate. And to complicate matters further, if the adjustment process is to succeed, many different parties—government planners and policy-makers, the civil service, private employers, trade unions, and the education system itself—must all do their part. If any one of them remains rigid and inflexible the whole process gets fouled up and makes things worse. Understanding this process is little comfort, of course, to the young person without a job, but it is essential that it be understood by all parties concerned if they are to help make the transition from education to work somewhat easier for future students.

The employment outlook for graduates in the 1980s is impossible to predict with any assurance. Conditions will certainly vary from country to country and from year to year and field to field, depending on a combination of factors including the total number of new entrants to the employment market, fluctuations in economic growth rates, technological changes, social and economic structural changes, and not least of all, the nature and quality of the preparation of graduates. One thing seems quite clear, however: few if any countries are likely again to experience the burgeoning demand for graduates that prevailed almost everywhere in the 1950s and 1960s—when war torn industrial nations were rebuilding their economies, making major technological strides, and rapidly expanding their educational systems; when newly independent nations were freshly building and staffing their new governmental, educational, economic and other infrastructures; and when economic growth rates in most of the world were running at unusually high levels.

An important favorable factor for developed countries will be the decline during the '80s, for demographic reasons, in the total number of new entrants to the labor market. Should this decline coincide with relatively strong economic recovery, the market for graduates, particularly in select "shortage" areas, could improve considerably over the 1970s. In any event, there are likely to be enough jobs to go around among higher education graduates, though they frequently will not be of the level their particular credentials have traditionally commanded. The people to worry about most are those with low educational qualifications who will be the ultimate victims of the "bumping" process in hard times.

One cannot be so sanguine, however, about developing country employment prospects. Almost all will continue to have an expanding overall labor force exceeding the absorptive capacity of their economy—including an expanding supply of graduates (though its rate of expansion will no doubt be slowing down in most cases, due to budgetary tightness and other constraints on the expansion of higher education). Posts in the government and educational system, the two principal employers of university graduates in most lower income countries, are already saturated and thus far fewer new graduates will be recruited in the 1980s than in earlier decades. Moreover, the "brain drain" to industrialized countries in the 1980s is likely to be smaller than previously, causing a larger supply build up at home. If, in addition, national economic growth rates remain low employment opportunities for graduates will surely soften further. Undoubtedly there will be some notable exceptions, especially among middle income developing countries which, because of oil resources or other particularly favorable local economic conditions , are able to sustain above average growth rates. But the likelihood for most countries is that many new graduates will have to settle for something less than they had hoped, below the kind of job their qualifications would have easily brought them 10 or 20 years ago. While this will be disappointing, it will hardly be a calamity, for they will still be much better off by virtue of their education and certainly their country will be.

One bright spot on the horizon is the possibility that some positive steps will finally be taken in the 1980s toward the much debated New International Economic Order. If the terms of trade and the export markets for developing countries in the developed world could be substantially improved, this would undoubtedly have an important stimulative effect on the demand for many types of educated manpower (as well as uneducated). Another bright spot for some countries, especially in Africa, is the possibility of replacing with well qualified locals the still sizeable number of expatriate experts and teachers still serving in the country.

The Growing Financial Squeeze

A further hard fact of life in the 1980s is that higher education systems virtually everywhere will be faced with an increasingly tight financial squeeze. It will certainly be most acute in the developing world, but it is already quite severe in the developed world. During the second half of the 1970s many higher education institutions in Europe and North America were forced to start making painful cuts in their budgets, programs and staffs. The combination of "stagflation", swollen national budgets and deficits, stiffening competition from other public service, mounting texpayer revolts, unemployment among graduates, and waning public enthusiasm brought the "golden days" of the '50s and '60s to a jolting end. The squeeze will tighten further in the 1980s as enrolments flatten out and decline, pushing expenditures per student upward against stringent budget ceilings.

Higher education institutions in developing countries, unlike those in developed countries, will continue to be besieged by powerful pressures to expand, but their ability to do so without seriously eroding quality and without further distorting the whole educational structure will be extremely restricted in most cases by overall national budgetary stringencies.

They cannot count on any quantum jump in external assistance to help them out of this bind. As noted earlier, overall external assistance, measured in constant values, largely stagnated in the 1970s and the share going to education—never more than a modest fraction—tended to decline. Moreover, several leading bilateral and multilateral assistance agencies have already indicated that they intend to give a high priority in the 1980s to assisting the expansion of primary and "basic" education and to various types of non-formal education directly tied to specific development objectives and programs. Though they are not turning their backs on higher education, their support at this level is likely to be much more limited and selective than previously.

In principle, the financial stress on higher education in both developing and developed countries could be considerably eased by cost-reducing adjustments and innovations and by curtailing less important expenditures, without serious damage to quality. For example, facilities could be more intensively utilized by going on a rotating year-round academic schedule and by using them in off hours for non-traditional students; in residential institutions two students might occupy lodgings presently used by only one. Numerous marginal items could be culled from the curriculum or offered less frequently if really important for some students. The number of small and expensive courses—the kind that proliferate so easily but seldom disappear—could be reduced in number and brought into better pedagogical and economic balance with top quality larger courses, making a reduction of the faculty/student ratio possible. More emphasis could be placed on self-study, and in some cases on increasing unjustifiably light faculty teaching loads. (Some universities in developing countries have faculty/student ratios that would be the envy of some of the strongest universities in the developed world.)

The potential for economies in higher education—especially in universities--is intrinsically much greater than at the lower levels because expenditures per student are so much higher, particularly in developing countries.

Table 2

PUBLIC EXPENDITURES ON ELEMENTARY AND HIGHER EDUCATION PER STUDENT, 1976

	Higher (post-secondary) education	*Elementary education*	*Ratio of higher to elementary education*
Sub-Saharan Africa	3,819	38	100·5
South Asia	177	13	9·0
East Asia	471	54	8·7
Middle East & North Africa	3,106	181	17·2
Latin America & Caribbean	733	91	8·1
Industrialized	2,278	1,157	2·0
USSR & Eastern Europe	957	539	1·8

Note : Figures shown are averages (weighted by enrolment) of costs (in 1976 *dollars) in the countries in each region for which data were available.*

Source : World Bank, World Development Report, 1980, *P.* 46.

University costs per student in many developing countries, but especially in Africa, are many times higher than in elementary schools; thus there should be far more room for economies in higher education than in primary.*

Of course, reductions in overall average cost per student in a university can be and often have been achieved simply by redistributing overall student enrolments away from higher cost fields (e.g. medicine, science and technology) toward lower cost fields (e.g. liberal arts, journalism, business administration, etc.). While this may be appropriate and legitimate under certain conditions, particularly where the number of graduates from high cost areas is already clearly more than sufficient to meet any likely demand, this is not a real substitute for the kinds of productivity—increasing and cost—reducing changes needed within *each* sector of the university.

The kinds of adjustments and economies referred to earlier could do much to ease the financial woes of universities without serious sacrifice of quality, but they could not alone solve the whole problem. It is therefore also essential to look for possible ways to increase revenues. One possibility in countries where higher education is heavily subsidized by public funds is to require affluent students and their families to pay a reasonable share of the real costs of their higher education, while at the same time establishing a generous scholarship and student loan program to avoid penalizing poorer students. In many countries, for example in Latin America, this would have the double advantage of (a) bringing increased revenues to the university and (b) reducing the present blatant inequity resulting from the poor subsidizing the high cost education of the rich through highly regressive tax structures. This, of course, would hardly be a popular move among middle and upper class families who have become accustomed to having their children's education heavily subsidized by the general public. But then, practically any serious step in the direction of greater social equality is likely to step on some important toes. To do nothing about these blatant inequalities, however, could ultimately prove far more politically painful.

There would undoubtedly be less objection to charging reasonable fees to unconventional students such as working adults who already have an income and who in some instances would be reimbursed by their employer. This could also be incentive to hard-pressed institutions to open their doors wider to unconventional students, as some are already doing (a mundane incentive perhaps, but for a lofty purpose).

A variety of other potential sources of new revenues for higher education to supplement what the central treasury can afford are worth exploration in each country, though care should be taken to choose only those whose administrative costs and difficulties do not outweigh the gains.

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*The fact that "wastage" (in an engineering sense) is often shockingly high in primary education in developing countries should not be taken as evidence that the average cost per student could be reduced by reducing "dropouts" and "repeaters". On the contrary, one of the main causes of high wastage and low achievement is that expenditure per student is often far too low (too low, for example, to afford books and supplies for the children and to maintain buildings in decent shape).

It would be naive, of course, to assume that any of the above possibilities for reducing costs and for supplementing revenues could be easily and quickly achieved. Most would almost certainly be resisted initially by faculty members or students and their families, or both. However, this simply under-scores the urgency of getting started early because, like it or not, some truly heroic and drastic measures will be required in the 1980s to alleviate the growing financial crisis of higher education everywhere. The "salad days" are over.

Educational Inequalities

This is another hardy perennial that moved to the forefront of educational policy concerns and political controversy in the 1970s and promises to become an even more burning issue in the 1980s. It is not, of course, simply an educational issue for it cuts across the entire social, economic and political fabric of every nation. The social disparities that show up in educational systems are to no small extent a reflection of deeply imbedded inequalities in the whole society and economy. Nowhere, however, are these disparities more magnified than in the universities.

In the euphoric days of the 1950s and 1960s it was widely believed that the massive expansion of education was the best means available to any democratically-inclined nation to uproot old prejudices and socio-economic injustices. Education was declared internationally to be "the birthright of every child" and universal primary schooling in developing countries was seen as an effective way to give all children—regardless of sex or family background—an equal start in life. In the more developed countries, where universal primary schooling already existed, the mass expansion of secondary and higher education was expected to open up wider opportunities and create upward mobility for *all* young people on the basis of their ambition and demonstrated ability rather than the accident of birth.

By the early 1970s, however, it was clear everywhere that the great world-wide educational expansion was not producing the sociological miracles expected of it. In every country, though in widely varying degree, there was still disturbing evidence of serious disparities and inequalities, within education itself as well as in the economy and society. The educational disparities were compounded at each successive level and hence were greatest in higher education.

This disappointing evidence transmuted the earlier optimism into skepticism, disillusion and even downright cynicism. Former believers in education as "The Great Equalizer" reversed their stand and now argue that social change must *precede* educational change, not the other way around. A minority of more radical academic critics with a propensity for conspiracy theories assert that "capitalist" (i.e. Western) educational systems and their imported versions in developing countries, far from being instruments of social change, are potent instruments of the ruling class for perpetuating their own power, by training the children of the exploited masses to be docile but productive workers.

Without wishing to become embroiled in this debate, we would offer three observations based on ICED's review of the available empirical evidence (which is admittedly spotty). First, the evidence leaves no doubt that widespread educational disparities—tied especially to sex, geographical location, and to socio-economic status—still exist in literally all countries and are most pronounced in the universities. Second, the same evidence suggests, however, that the various forces underlying these disparities are far too complex to be explained by any simple social theory of one-way cause and effect, conspiratorial or otherwise. Third, the evidence does offer certain encouragement; progress has clearly been made in most countries over the past 20 years in reducing some of these educational disparities, though the progress has generally been quite modest and far below the high hopes and expectations of 20 years ago.

Sex Disparities : The proportion of girls in total higher educational enrolments has risen significantly in all regions except Africa. For developed countries as a whole it increased from 38% in 1965 to 46% in 1977, and in developing countries during the same period from 27% to 33%. Within each category, however, there are wide differences among individual countries. In the developed world, for example, women now constitute roughly half of total higher education enrolments in such countries as Canada, Sweden, the USSR and the United States, whereas they still represent little more than one-third in such countries as Japan, the Netherlands, the Federal Republic of Germany and the United Kingdom.

The differences are even greater among developing countries, ranging from less than 20% women in such countries as Bangladesh, Ivory Coast, Senegal, and the Cameroons to approximate parity between women and men (as of 1977) in such countries as Brazil, Burma, Panama and the Philippines.

Generally speaking, the *lowest* female to male ratios are found in countries where overall participation ratios in higher education are still quite low (e.g. Africa) and where deep-rooted religious and other cultural factors still strongly resist equality of education and employment for girls and women (e.g. in many, though not all, Moslem societies). Conversely, where rapid increases in higher education have occurred, the percentage of women enrolled has generally increased disproportionately.* Rapid urbanization has also favored increased female enrolments, reflecting the faster breakdown of traditional cultural barriers in cities than in the country-side.

The point to be emphasized with regard to developing countries is that large sex disparities in *higher* education are usually rooted in substantial sex disparities in *primary* and especially *secondray* education. (See Table 3.) Until the latter disparities are sharply reduced, those in higher education are bound to remain larger. It is noteworthy that these statistical sex disparities have all but disappeared at the primary and secondary levels in many Latin American countries and that female representation in higher education is now approximately as high as the average for Europe.

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*Brazil is a dramatic case in point. Between 1970 and 1974 total higher education enrolments more than doubled (from 430,473 to 954,674), and in the same period female participation increased by 10 percentage points (from 37·7% in 1970 to 47·4% in 1974).

Table 3

PERCENTAGE OF GIRLS IN TOTAL
ENROLMENTS BY LEVELS 1965—1977

	Primary		*Secondary*		*Higher*	
	1965	1977	1965	1977	1965	1977
Developed Countries	49	49	49	50	38	46
Developing Countries	41	43	32	37	27	33
Africa (excluding Arab States)	39	43	31	37	20	20
Asia (excluding Arab States)	41	41	35	37	26	30
Arab States	35	39	27	36	20	28
Latin America	49	49	48	49	33	43
Europe	49	49	47	49	34	43
Northern America	49	49	50	50	39	39

Source: UNESCO Yearbook 1980.

The point to be stressed with regard to developed countries (though it is applicable also to developing countries) is that the overall sex ratios in higher education enrolments, which in many instances are now close to parity, generally conceal sizeable sex disparities between different types of institutions and different fields of study. These in turn reflect traditional sex biases and discriminatory hiring practices in different professions (including the professoriate itself) and other fields of employment. It is common to find very low female enrolments in traditional "men's fields" such as the pure sciences and mathematics, engineering and architecture, but disproportionately high female enrolments in the traditionally acceptable "women's fields" such as education, the arts and humanities, nursing and home economics. Why, after all, should a bright young woman study engineering when neither her government or the private sector in her country is interested in hiring female engineers ?

These discriminatory hiring practices underwent considerable change during the 1970s in many developed countries (and in a number of developing countries as well), thanks in part to the upsurge of the "women's rights" movement and in some cases also to the adoption and more rigorous enforcement of antidiscrimination legislation. Such changes were especially dramatic in the United States and have already been reflected there in sharp increases in female university enrolments in such traditional "men's fields" as law, medicine, architecture and business administration. Indeed, American women have now even invaded the previously all-male sanctuaries of the national military academies.

If one had to guess what will happen in the 1980s, it would be that sex disparities in higher education will continue to narrow in most developed countries and—though generally less rapidly—in most developing countries as well. In developed countries the smaller age cohorts entering the employment market and (in many but not yet all cases) the liberalized hiring practices of governments, universities and private business, will favor the educational, economic and social advancement of able and motivated women. The same forces of liberalization will be at work—in varying degrees of intensity—in many developing countries as well, but in many cases the continiung increase of new entrantes into the labor force and the softening of the employment market for graduates will tend to deter the expansion of women's opportunities. Finally, it can be expected that wide differences among countries throughout the world in the role of women in higher education will continue to exist.

Geographic Disparities : In the highly industrialized Western nations the historic large disparities in access to higher education between urban and rural youth have greatly diminished since World War II and in some countries have virtually disappeared. Among the reasons are : the dramatic shrinkage of rural populations, improved rural incomes and living conditions, better transportation and communication, and the extension of higher education facilities into provincial areas. In a number of the less industrilized Western nations (particularly in Southern Europe), however, and in most Eastern European countries and the USSR, these geographic disparities, though smaller than they were 20 years ago, are still substantial. In these countries the rural population is still sizeable, rural schools—especially at the secondary level—still lag well behind urban schools, and accessible higher institutions do not exist in remote areas. In addition, the average educational, cultural and income level of rural parents is still relatively low compared to urban parents, and this tends to dampen the educational motivation and aspirations of many children.

But this situation is changing fairly rapidly. During the past ten years the USSR, for example, has largely achieved its long-standing goal of extending compulsory schooling through the lower secondary level into all rural areas. In the 1970s the USSR, in an effort to equalize access for different social groups, also introduced new "preparatory divisions" in higher institutions designed to give a year of special preparation to bright young workers and rural youths before entering the regulr program. Efforts to strengthen rural secondary schools are also being made in virtially all Eastern and Southern European countries. Thus the prospects for getting to higher education should steadily improve for bright and motivated rural boys and girls over the next ten to twenty years.

The situation in most of the developing countries is dramatically different, and far worse. Their present dual educational systems, described earlier, deprive the large majority of rural youngsters from even getting a full primary education, much less a secondary or higher education. This condition is not confined to the lowest income countries of Africa and Asia ; it is surprisingly widespread among the relatively higher income nations of Latin America where often half or more of the rural primary schools have only one or two or three grades and the children (officially recorded as "drop-outs") have nowhere to go from there.

Ironically, even the agricultural colleges in many developing countries admit comparatively few young people with rural backgrounds because their poor secondary preparation puts them at a serious competitive disadvantage with mediocre urban secondary graduates who are not good enough to get into the regular university and choose the agricultural college as a last resort (often with no intention of entering a rural career).

There are also wide differences of educational access among different rural districts and villages within these countries. Those close to major cities and important market towns, or that are especially well endowed ecologically and are economically dynamic provide better educational chances than more remote and economically stagnant villages.

Another large and seriously disadvantaged group is the children in the spreading urban shanty-towns, many of whose families are recent migrants from rural areas.

It is obviously going to take at best many years of concerted effort and sizeable expenditures to bring these gross geographic educational disparities down to a tolerable level. But this cannot happen if higher education and the urban schools continue to get the lion's share of any additional educational resources. As the data in Table 4 shows, the cost of adding one additional university student in most developing countries can mean *not* adding anywhere from 9 to 100 primary school pupils.

Socio-economic Disparities : Disparities rooted in socio-economic status are clearly the most fundamental and widespread ones in all education and in higher education especially, in both developing and developed countries. These disparities underlie many of the sex and geographic disparities discussed above, and they are the most difficult ones to eradicate because they tend to be perpetuated from one generation to the next.

The available evidence shows that in virtually all nations today, irrespective of ideology or level of development, children of parents who are high on the educational, occupational and social scale have a far better statistical chance of getting into a "good" secondary school and from there into one of the "best" colleges or universities than equally bright children of ordinary workers or farmers. This pattern shows up consistently in all of the sociological studies of university students that have been conducted in Western and Eastern Europe and the USSR.

As might be expected, if only for arithmetic reasons, the sociological "skewness" of university student bodies has diminished somewhat in most developed countries as a result of the great increase in enrolments and participation rates. Nevertheless, to the surprise and disappointment of many educators, a marked skewness still exists.

Although recent sociological studies of student backgrounds have been far fewer in developing countries, (except in Latin America) there is little doubt that an even greater skewness exists in most of their universities. A significant study in Latin America in the '70s, of conditions prevailing around 1970, compared the average number of years of schooling and the cumulative public educational expenditures per child for the children of families in different income groups. The findings, summarized in Table 4, indicated that the average child in the low income group (comprising about 65% of the total population of the group of countries studied) completed an average of about 2-2½ years of formal schooling at a total public cost of US $113, while the average child from the highest income group (about 5% of the total population) had completed 17 years of schooling at a public expense of US $4,753.

Table 4

PUBLIC EXPENDITURES ON EDUCATION
BY INCOME GROUPS
A COMPOSITE PROFILE OF LATIN AMERICA
(CIRCA 1970)

Population by Income Level	*% of Total Population*	*Average Years of Schooling*	*Cumulative Public Expenditure Per Pupil* (1970 *US* $)
Low	65	2·47	113
Medium Low	20	8·64	596
Medium High	10	14·25	2,687
High	5	17·00	4,753

Source: Ratinoff & Jeria paper for Inter-American Development Bank.

The skewness may well become even more accentuated in the future, particularly in countries (especially in Africa) that started off with little or no higher educational capacity 25 years ago and with a very low parental literacy rate. In such situations the first generation of university students inevitably included a sizeable percentage of children of poorly educated and illiterate parents, but with more and more young people now having joined the "educated elite", *their* children will have a decided competitive advantage in the future over children of uneducated parents.

History clearly shows that educational disparities rooted in ubiquitous socio-economic disparities cannot be overcome by education alone. This is not to say, however, that education cannot help, for it clearly has helped historically in a great many countries. Indeed education must be an essential component of any broad strategy for reducing major inequalities of any kind in any society. The point to emphasize is that education contributes most effectively to social change and justice when it is teamed up with other strong social, political and economic measures directed toward the same objective. However, anyone expecting such fundamental social changes to take place quickly in any society—whether by evolution or revolution—is courting disappointment. Such changes inevitably involve a lengthy process at best, for they require the remaking of many individual and institutional attitudes and behavior patterns. One can hope, however, that with the increased sensitivity to issuse of inequality and human rights that emerged in the 1970s, the process will be accelerated in most countries in the 1980s.

Planning, Management and Governance

Historically universities were never really "planned" or "managed" in the contemporary sense; they did not have to be. They just muddled along from year to year, carried by their own momentum and steered by their ingrained procedures and habits. Indeed, that was the beauty of universities ; they provided a loose and congenial environment for a relatively unfettered intellectual life (though they were probably never as idyllic as today's nostalgic recollections would have it).

The past quarter century of rapid institutional growth has changed all that, however. *Someone* had to be in charge of shaping future plans, prodding needed changes, monitoring the whole process, putting out fires and trying to avert future ones, and not least of all, keeping the accounts and doing battle each year (or each quinquennium) to win a larger budget. The difficult question was : who was going to be in charge ? University faculties, particularly in the European tradition, were not accustomed to having *anyone* in charge and were allergic to notions of "planning" and "management"—at least as applied to their own institutional life. Hence, when the big expansion got underway in the 1950s there was an almost total absence in most of these institutions of the kinds of mechanisms, procedures, and information flows essential to the rational planning and management of their own future and to adapting them to the changing conditions of society and the changing characteristics and learning needs of their expanding student body.

Far more complex problems of planning and management arose, however, when many new higher educational institutions began to proliferate, most of them heavily dependent on the public treasury. This required planning and managing not simply of individual institutions but of a whole network of them. And who should be incharge of this network ? What provisions should be made to insure a rational division of labor among the separate institutions, to insure a reasonable fit between their collective activities and the evolving needs of the society, and to insure the responsible and efficient use of increasingly larger funds provided by the taxpayers ?

In these changed circumstances, there was obviously no escaping a substantially increased governmental hand in this enlarged process of planning and management—the more so since the universities themselves seemed conspicuously ill-equipped to handle it. But this stronger and broader role by government raised disturbing questions. Who would really govern higher education—politicians and bureaucrats or academics? Or some new breed of strong-handed university administrators and trustees? Or a melange of all three? Who would initiate important changes in plans and policies and in the allocation of resources? Who would be the prime movers of innovations aimed at keeping the universities from stultifying in their old tracks? How should universities and non-university institutions be related or coordinated? Should the system be centralized or decentralized, or some of each; and, if the latter, then what would be a viable division of functions and responsibilities at each level, and how would they be exercised?

ICED's recent comparative international studies of how different countries have tried to cope with these system" problems reveal a fascinating variety of approaches.* For example, while France, following the Events of May in 1968, plunged headlong toward converting the most highly centralized university system in Western Europe into a decentralized one, Sweden was moving in exactly the opposite direction. In the United Kingdom, the University Grants Committee continued to be a shield between the politicians and bureaucrats and the universities, but the rapid growth process obliged the UGC to lay on a much firmer hand than ever before and to become the system's central planner and manager (to the growing discomfort of vice chancellors of individual institutions). In the United States, individual state governments moved increasingly toward becoming the central planners of public higher education (private institutions striving to escape their grasp), and the federal government through its much enlarged but extremely uncoordinated research grants and contracts (coming from a variety of agencies) exerted an increasingly powerful and disruptive influence on the research programs of universities. Meanwhile, in the Eastern centrally-planned countries, detailed planning, decision-making and management of all higher education was concentrated in a central bureaucracy, creating what has come to be regarded by the faculty, administrators and students of individual institutions as an increasingly insufferable degree of uniformity, rigidity, and inefficiency.

Developing countries face parallel but even more difficult dilemmas in the area of planning, management and governance. Although their systems of higher education are relatively smaller, they have been growing rapidly and the problems of transforming them from Western models to indigenous ones, better adapted to the local culture, development needs and resource limitations, pose very perplexing problems.

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*See, *Twelve Systems of Higher Education: Six Decisive Issues,* ICED, New York (1978); also separate published ICED studies on Australia, Canada, Federal Republic of Germany, France, Iran, Japan, Mexico, Poland, Sweden, Thailand, United Kingdom and the United States.

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Higher Education into the 21st Century*

M.S. SWAMINATHAN

Looking ahead, our country as well as West Bengal will face altogether new challenges in the year 2000. The challenges will relate not only to the already existing problems of illiteracy, poverty and unemployment, but also to more serious problems relating to the conservation of basic life support systems like soil and water, fauna, flora and the atmosphere.

Retrospect

When we look at the past 25 years from the point of view of the growth of university education in the country, any objective observer cannot but be impressed by the tremendous advances made. Thus the number of universities in the country increased from 27 in 1950-51 to 119 in 1979-80. The number of colleges increased from 798 in 1950-51 to 4558 in 1979-80. Consequently, enrolment at degree and post-graduate levels increased from about 4 lakhs in 1950-51 to 26.5 lakhs in 1979-80. The enrolment of girls in the universities has also steadily increased, reaching a percentage of 26 in 1979-80. The outlay in the First Five Year Plan (1951-56) for university and college education was Rs. 14 crores. The outlay in the Sixth 5-Year Plan (1980-85) is Rs. 483 crores. Thus both in terms of quantitative expansion of facilities for higher education and the scatter of such facilities in the country, there has been an impressive progress since the time Jadavpur University came into existence.

The number of post-graduate scientists made available to the country by the University system has been estimated by Dr. B.K. Nayar of the CSIR to be of the following order:—

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*Adapted from the authors Silver Jubilee Convocation Address of the Jadavpur University, March 7, 1981.

Category		*Number*
Agriculture		29,000
Botany		33,000
Zoology		34,000
Physics		45,000
Chemistry		78,000
Mathematics		60,000
Statistics		11,000
Geo-Sciences		11,000
Geography		34,000
Psychology		28,000
Other Sciences		10,000
	Total About:	3,70,000

Inspite of this impressive progress there are serious problems relating to the quality and relevance of higher education with the result that the links among education, employment and development are not well formed or even non-existent in several area of university education. Consequently there is considerable unemployment among educated youth. Current estimates of educated unemployed put the number at about 3.5 millions (1979-80). A majority of them are matriculates. The wide-spread incidence of poverty in the country (Table 1) leads to inadequate resource back-up to universities and S & T manpower. Poverty in its turn is due to our inability to profit from our vast human resource. When the human resource is under-valued and land and other physical assets are over-valued, poverty persists.

New Problems

There are several other problems related to university education which are fortunately now engaging the serious attention of the academic community. These include the special problems faced by first generation learners for which pedagogic solutions are yet to be developed, the academic culture and ethos prevailing in the universities and above all the relevance of the education system in relation to the needs and problems of real life. I feel that issues can be resolved satisfactorily only by the total involvement of the faculty and students of the universities in understanding and facing them. In a recent lecture delivered at the Central Institute of Education, Delhi[1], I had dealt with the role of non-monetary inputs in improving the quality of higher education. Hence, I wish to confine myself in this talk to dealing with two sets of problems where, in my view, there are great opportunities today for combining classroom and real life learning. The first relates to the elimination of destitution and reduction in poverty. In the Sixth Plan, a household approach to poverty alleviation has been suggested. The major elements of this approach are:

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[1] Founder's Day Address December 19, 1980.

(i) Transfer of assets like land and livestock to families with no asset base;
(ii) Employment generation with integrated attention to salaried, self and wage employment;
(iii) Providing the basic human needs, such as drinking water, education and health care; and
(iv) Promotion of a small family norm.

All these elements need to be integrated into a well planned household approach so that within the next four years a measurable degree of progress can be made in eliminating absolute poverty. All religions and philosophies stress that bringing cheer into the lives of the poor is the best form of prayer. Therefore, there can be no greater challenge to the university system than involvement in programmes designed to give human beings a human existence. To be meaningful, this should be done as an educational and not as a social service programme. You may wonder in what way the university system can respond to such a large and complex task. I would like to offer a concrete suggestion for your consideration.

Starting from October 2, 1980, the Integrated Rural Development Programme has been extended to all the blocks of the country. This programme aims at achieving (a) economic emancipation of poor families, (b) provision of necessary infra-structure for development, and (c) promotion of steps for optimising producers' return and consumers' satisfaction. The programme also envisages a new deal for the self-employed and the promotion of opportunities for individual and group self-employment in land and water based occupations, non-land enterprises and organisation of relevant services. The programme also aims to provide residuary employment to the landless poor during the lean agricultural season through a National Rural Employment Project. All these, however, will require a considerable input in the field of planning and programme implementation.

Role of Universities Work Experience

This will call for a closer alliance between brain and brawn. This is where the university system can play a pivotal role. One method of achieving this will be to ensure that every block in the country is served by one unit of the National Service Scheme (NSS) and National Cadet Corpse (NCC). At present about 4·5 lakhs of university students participate in the NSS throughout the country. The strength of the NCC is about 4 lakhs at the senior level and 7 lakhs at the junior level. Thus even now we have over

15 lakhs of boys and girls serving in NSS and NCC in the country. This number can be easily raised to about 20 lakhs, thereby providing a combined NSS-NCC unit of about 400 students per block. In other words, one unit each of NSS and NCC could be attached to every IRD Block performing such tasks in the area of rural development where the units have a competitive advantage by virtue of their skills and academic and professional back-up services. This type of structured linkages between NSS and NCC units on the one hand and the block administration on the other should provide opportunities for satisfying work experience in fields, such as environmental improvement, drinking water supply, eradication of specific diseases like blindness in children caused by Vitamin A deficiency, malaria, filariasis and so on. Work performed in this way will not be mechanical work but will be pregnant with learning opportunities. At present, the work done by many such units tends to neither have an economic impact nor an educational content. If we can organise one NSS/NCC group linked to each of the 5000 blocks in the country, we will see the beginning of a more enduring inter-action between the academic community and the rural population. Such symbiosis between the academic and rural worlds can alone generate the desired degree of synergy in development.

The second area where I feel there are challenging opportunities for university participation in national development is economic ecology. We see all around us a rapid deterioration in environmental quality, partly due to demographic pressures of man and animal and partly due to either wanton or ignorant human interference. We take pride in saying that it was Emperor Ashoka who was the first in recorded history to provide detailed guidelines for setting up wild life sanctuaries and nature conservation organisations. Similarly, we take pride in the advanced state of knowledge of eugenics in our country long before the rediscovery of Mendel's Laws of Inheritance. Our ancestors had realised over a thousand years ago the importance of heredity in the transmission of both good and bad characters in human population. The ecological diversity of our country arising from the wide range of soil and climatic conditions prevailing in different regions is reflected in our rich fauna and flora. In fact, greatest concentration of primate species occurs in India. The entire eastern region is a rich reservoir of valuable genes in both plants and animals. It is believed that the original home of rice occurs in Orissa and that of citrus in eastern himalayas. We have very primitive races of maize in Sikkim and north-eastern himalayan region, thus suggesting that the exchange of plant material between the old and new worlds preceded the discovery of the new world by Columbus. However, what we see today around us is the gradual destruction of all this biological wealth of inestimable value. For example, in a recent book entitled "Stones of Silence", George B. Schaller writes as follows:

> At most a few hundred Kashmir stags, a sub-species of red deer, survive in the Vale of Kashmir, their only home. Yet as recently as 1947 there were over 4,000, the animals having brought

to the verge of extinction because no one cared. There are many species similarly threatened, all in need of some one concerned enough to fight for their needs. The fact that a living being can vanish from the earth solely because of man's improvidence and neglect is appalling and the utter finality of it touches the consciousness of far too few. I have met in the Himalayas many species without a future.

Economic Ecology

Fortunately, there is now a growing awareness of the threat to our very survival if the current rate of soil and gene erosion and water and atmospheric pollution proceeds unchecked. Awareness has also led in several cases to analysis of the maladies and possible remedies. Logically, analysis should lead to action. However, this is the missing link in the awareness-analysis-action chain. We have so far concentrated mainly on methods of analysis of problems through frequent seminars, symposia, etc. It is high time that we also took appropriate action since otherwise paralysis is the only result of analysis.

This again is a field where the university community can show the way. In the Sixth Five Year Plan provision has been made for stimulating such a movement. Universities can help in the following two ways. First a multi-disciplinary economic ecology group of the university consisting both staff and students can undertake a systematic analysis of problems relating to development without destruction in the areas surrounding the university. Not only the damage, which is now taking place at an increasingly alarming rate to soil and water resources and to fauna and flora need careful monitoring, but also the problems of the atmosphere such as the concentration of carbon dioxide need study. A recent international seminar came to the following conclusions about the carbon dioxide problem:

> Carbon dioxide is increasing in the atmosphere and may cause 'green house' effect on the earth. Most of the increase in CO_2 concentration is due to the burning of fossil fuels, but partly it could be due to deforestation. There could be an increase of 2-3°C temperature of the globe with the doubling of CO_2 concentration, which could influence agriculture, fisheries and other biota. It is difficult to specify the regions which would be affected most but some effects could be in tropical regions also. One of the measures to control this situation is to change the use of sources of energy. For example, a change to renewable biomass may be more beneficial.

Unfortunately, we have not yet given serious thought to such problems. A recent report compiled by the Department of Science and Technology, brings out the vast untapped potential for biomass utilisation in our country. The rich countries in contrast are trying to capitalise upon this potential.

For example, at the Royal Swedish Technical University at Stockholm, a laboratory model has been developed to convert biomass into oil or gas. It has been reported that the yield of oil can be as much as 30% of the dry biomass. We need more intensive experiments of this kind in our universities. Now that an Alternate Energy Commission has been set up by the Government of India, it is to be hoped that there will be more intensive and coordinated attention to such possibilities.

It is proposed during the Sixth Plan period to provide opportunities for the students and universities to organise eco-development camps in different parts of the country. Such camps can take up specific assignments, such as the establishment of a biosphere reserve, marine and inland national parks, gene sanctuaries, "Hot Spot" screening nurseries, etc. Also the, students participating in such camps could be drawn from different parts of the country, working together in restoring damaged hill eco-systems, providing fodder and fuel to rural people and similar tasks. I wish to emphasise again that in all such projects intellect and labour must be combined together so that the educational component of such an activity is given as much importance as the purely social service, physical work or other aspects of the work plan. Many of you would have seen the beautiful film relating to the "Ocean to Sky" expedition. There are universities all along the Ganga. Cannot they join together in an "Ocean to Sky" analysis of pollution in the Ganga and its elimination?

If the academic community can get involved more intimately in programmes of poverty elimination and eco-development, education, employment and development would become integrated.

I hope that the tremendous achievements of our nation during the last 25 years would provide the inspiration necessary for facing the even more challenging tasks ahead of us. During the last 25 years we have increased our capacity for food production by an order greater than that achieved during the previous 10,000 years of our agricultural evolution. However, during the next 25 years we have to repeat this performance again. In other words, even to stay where we are, we have to run twice as fast. Fortunately, necessity is the mother of invention and the human mind gives its best when the challenge is the greatest. I have every hope that several of the young scholars of today on whose shoulders the privilege of managing the problems the country will face in the next century, will rise to the occasion.

Table I

PERCENTAGE OF POPULATION BELOW THE POVERTY LINE BY STATES SEPARATELY FOR RURAL AND URBAN AREAS, IN 1977-78

Sl. No.	*State/U.T.*	*Rural*	*Urban*	*All Combined*
	(1)	(2)	(3)	(4)
1.	Andhra Pradesh	43·89	35·68	42·18
2.	Assam	52·65	37·37	51·10
3.	Bihar	58·91	46·07	57·49
4.	Gujarat	43·20	29·02	39·04
5.	Haryana	23·25	31·74	24·84
6.	Himachal Pradesh	28·12	16·56	27·23
7.	Jammu & Kashmir	32·75	39·33	34·06
8.	Karnataka	49·88	43·97	48·34
9.	Kerala	46·00	51·44	46·95
10.	Madhya Pradesh	59·82	48·09	57·73
11.	Maharashtra	55·85	31·62	47·71
12.	Manipur	30·54	25·48	29·71
13.	Meghalaya	53·87	18·16	48·03
14.	Nagaland	N.A.	4·11	4·11
15.	Orissa	68·97	42·19	66·40
16.	Punjab	11·87	24·66	15·13
17.	Rajasthan	33·75	33·80	33·76
18.	Tamil Nadu	55·68	44·79	52·12
19.	Tripura	64·28	26·34	59·73
20.	Uttar Pradesh	50·23	49·24	50·09
21.	West Bengal	58·94	34·71	52·54
22.	All Union Territories	34·32	17·96	21·69
	All India (weighted)	50·82	38·19	48·13

Note: 1. The above estimates are derived by using the all-India poverty line of Rs. 65 per capita per month in 1977-78 prices corresponding to minimum daily calorie requirement of 2400 per person in rural areas and the poverty line of Rs. 75 corresponding to calorie requirement of 2100 in urban areas.

2. These results are based on the provisional and quick tabulation of National Sample Survey on household consumer expenditure of 32nd round (July, 1977 to June, 1978.)

3. The difference between the aggregate all India private consumption expenditure estimated by Central Statistical Organisation in their National Accounts Statistics and that derived from the NSSO data has been prorata adjusted among the different States and Union Territories in the absence of any information to allocate this difference among the State and Union Territories.

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Foundation and Role of UGC

AMRIK SINGH

The UGC in India is different from any grant-giving agency in any country of the world in one significant respect.

It is possibly only in India that the UGC has been vested with two powers simultaneously. One is the power to provide funds and the other is the power to determine and coordinate standards. In other countries, for instance, Canada, Australia, USA, even West Germany, funds are provided by the Federal Government and there is a good deal of argument about the quantum of grant, the procedures of release and other related issues. In none of these countries however does the Federal Government have the same right in respect of the determination and coordination of standards as the Union Government in India has.

According to the Constitution adopted in 1950, the Centre was given the requisite powers in respect of higher and professional education. In respect of the other levels of education, the Centre has come to acquire increased powers after the 42nd amendment was adopted in 1976. Whatever be the political realities on the ground, on the constitutional plane the Union Government in India has powers which perhaps no other federal country has. How this came about is a matter that does not have to be discussed here. The focus of discussion in this paper is on how the UGC came to be established and how it was decided to vest it with the powers that it commands today.

The greater part of this story is a forgotten chapter in the history of higher education. To re-call some of those controversies and the circumstances in which the UGC came to be established can throw a certain amount of light on how the UGC came to be vested with powers which are hardly to be found in any other grant giving body in a democratic country. Whether those powers have been used or not is another question. A number of committees appointed by Parliament as also a Review Committee appointed by the Ministry of Education have gone into those questions. Those who wish to know about this aspect of the problem may refer to these various volumes. The point just now is to trace the process of thinking which, step by step, led to the establishment of the UGC as we know it today.

II

The Republic was inaugurated on the 26th of January 1951. A few months later the Ministry of Education prepared a draft bill entitled "The Universities (Regulation of Standards) Bill". The sub-title of the Bill was "To Regulate certain matters relating to the Coordination and Determination of Standards in Universities". The statement of Objects and Reasons stated as follows:

> The Constitution of India vests Parliament with exclusive authority in regard to 'coordination and determination of standards in institutions for higher education'. It is obvious that neither coordination of the institutions nor determination of their standards is possible unless the Central Government has some control over the establishment of new universities, the definition of territorial jurisdiction and the determination of standards of teaching and examination in Universities, both old and new.

With this objective in view the proposed bill put forward certain proposals and the principal ones are enumerated below:

(i) No university established after the commencement of this Act by or under a State Act shall be deemed to be a university unless the Central Government by notification makes a declaration to that effect.
(ii) It is open to the Central Government to declare any institution for higher education other than a university to be a university.
(iii) No institution other than a university would have the right to confer degrees.
(iv) In order to carry out the work of coordination and determination of standards, a Central Council of University Education is to be established. At least one-third of the members of the Council would be Vice-Chancellors.
(v) The Central Council can ask for information about any aspect of university work from a university and would have the powers to direct the executive authority of any university to take such action as may be specified.
(vi) In case any university fails to comply with the directions issued within a reasonable time, the Central Council would be authorised to advise the Central Government to de-recognise any degree conferred by such a university for the purpose of employment under the Central Government or for any other purpose.

This draft Bill was circulated to State Government as well as to universities for opinion. Except for one, none of the State Governments opposed the Bill. This was stated by Humayun Kabir at a Conference of Vice-Chancellors and representatives of universities in India which was held in September 1952, i.e. approximately a year after the bill was circulated. During this period, however, the universities opposed the bill strongly and with a certain measure of persistance. As far as the State Governments were concerned, they had little to say in criticism of it, possibly for the reason that the Indian Constitution had been adopted only a couple of years earlier and the power to coordinate and determine standards vested in the Central Government was a part of the consensus that had been worked out under the benign leadership of Jawaharlal Nehru. Not only was the *ethos* of political life more or less homogeneous in its approach and orientation, the same political party exercised power in all the States. Some of the subsequent contentions between the Centre and the States of which one has been hearing a good deal during the last couple of decades were not heard of at that time.

The universities, however, reacted differently. They were vehemently opposed to the bill. They advanced three main arguments and these may be described as follows:

(i) It is for the universities themselves to regulate, maintain and coordinate their own academic standards.
(ii) For any outside agency to seek to undertake this job would amount to violating university autonomy.
(iii) If the standards were low it was mainly for lack of funds. Once adequate funds were made available, there would be hardly any problems.

At this meeting speaker after speaker waxed eloquent on how the Central Government was planning to take away the autonomy of universities. The number of universities at that time was not particularly large, it was more in the neighbourhood of a quarter century than otherwise. More than 20 universities were represented at this meeting and amongst some of the luminaries who spoke the following may be mentioned:

Prof. Hadi Hasan; Prof. A.C. Banerjee; Dr. V.S. Krishna; Dr. R.K. Shanmukhan Chetty; Mrs. Hansa Mehta; Sir Navroji J. Wadia; Sir Vithal N. Chandalvarkar; Dr. G.S. Mahajani; Dr. V.K.R.V. Rao; Sir A.L. Mudaliar; and Sir A. Ramaswamy Mudaliar.

On behalf of the Ministry of Education Humayun Kabir was present. He described his presence at the conference as almost that of "a culprit in the dock."

All kinds of interesting things were said at this conference. Some of the remarks made at that conference may be reproduced here in order to convey a flavour of what was said:

(a) We feel that no outside body should tell us how to coordinate our standards and how to determine our courses of study. I feel, therefore, Sir, that this Bill, if passed into legislation, will do untold harm and I am unable to see any good that it will do. It is true that a Central Council might do some good but only if it is made purely an advisory body and if it is constituted almost entirely of Vice-Chancellors and other representatives of Universities (Sir N.J. Wadia, Vice-Chancellor, Bombay).

(b) If the Central Government had begun to realise their constitutional responsibility in the matter of higher education, this Bill, instead of taking this shape, must really have taken the shape of a Bill to create a University Grants Committee and then to define what the powers of the University Grants Committee would be and what the functions of the Central Government would be in regard to their responsibility. Because once you recognise that the Central Government must be the source of finance to the universities, then even the most ardent advocates of university autonomy cannot deny the implications of such a statement, viz. that if the Central Government which is responsible for finding the major part of the finances must have some voice, in some manner or other, for the way in which all this money is spent so that the whole basis of this proposed legislation must start from the kind of financial help that the Central Government is expected to give and what consequences regarding control of the Central Government would follow the grant of financial resources to meet the needs of the universities. Instead of doing that, the Bill has been shaped in such a manner that one is tempted to think that the Central Government is following in respect of the education the example of non-democratic countries. (Dr. R.K. Shanmukhan Chetti, Vice-Chancellor, Annamalai).

(c) Let us confess frankly that standards vary from University to University but there is the constant attempt on the part of political bodies to lower the standards, to revise examination results, to have more percentage of passess than the University authorities think it desirable, to give grace marks and in fact influence the Universities in such a way that the number of first classes is more than the number of second classes. These are the obvious defects which the Inter-University Board can tackle, if it has only a little more power than it has at present. A fundamental difficulty of this Bill that has not been realised is the clash between the powers already existing and the powers proposed to be given to the new authority. It has ignored all the existing structure; it has ignored the Inter-University Board which has been in existence for 26 years and has done some little to put up standards of education. If in spite of that, here and there, standards are low, it is because sufficient powers are not given to the Inter-University Board. (Sir A Ramaswamy Mudaliar, Vice-Chancellor, Travancore).

(d) It is no use asking us to do this and that and not helping us at all with money. There was a Grants Committee appointed in the past, of which I was a Member, but we met once or twice and became defunct and there was no grant to distribute. If the Government of India think of raising standards, they must give financial assistance. (Mrs. Hansa Mehta, Vice-Chancellor, Baroda).

(e) The question of standards is of a question of finance. If the standards are low it is not because of the Universities but in spite of them. (Prof. Hadi Hasan, Aligarh).

(f) Even supposing that the Central Government agrees that the Central Council should consist only of Vice-Chancellors, I would very strongly put it to this body that we cannot allow any other body to issue directives. I can understand they can argue and try to persuade us but I am of opinion it is a complete breach of the very principle even if the Constitution is changed and it consists only of Vice-Chancellors....I therefore suggest that the Government should take note of the views expressed by us regarding the constitution of the Grants Committee which would be an autonomous body and would disburse grants to different Universities in India. The Grants Committee should advise the Universities in all matters, but they should refer all such matters to a Committee of Vice-Chancellors appointed by the Inter-University Board or the Standing Committee of the Inter-University Board, which would act as a liaison between the Grants Committee and the Universities. (Dr. V.K.R.V. Rao, Delhi).

Clearly, the Universities were opposed to the idea of any agency other than themselves to regulate standards. Quite a number of them felt that if the Inter-University Board had more powers than it exercised at the moment they could perhaps do the job equally well. In any case the one over-riding concern was to get additional funds from the Central Government. Several of them suggested the establishment of a Grants Committee on the lines of the UGC in Britain. Indeed some of them harked back to the pre-1947 days when an informal Grants Committee had been established in the Ministry of Education and did dole out some grants. Some of the well-known Vice-Chancellors were even associated with it. Both Lakshmanswami Mudaliar and Hansa Mehta referred to their association with this Committee but obviously there was very little money to disburse and so the Grants Committee either did not function or became defunct.

Humayun Kabir who was present at this meeting in his reply made the following points:

(i) The Government did not for a moment want to encroach upon the autonomy of the Universities.

(ii) If the Inter-University Board could suggest some machinery for improvement in standards, the Government would be glad to consider those suggestions.

(iii) Uniformity in standards and attainments was all that was contemplated and not necessarily uniformity in courses and syllabuses.

(iv) There were some slighting references to the amount of Rs. 2½ crores in five years which was to be made available to the universities from the American Wheat Loan. But Humayun Kabir informed the conference that even in the First Plan the Planning Commission had provided Rs. 12 crores for the Universities.

(v) He conceded that the use of the word "direct" was unfortunate. What was intended, according to him, was to draw the attention of the Universities to certain matters. May be the word "direct" could be replaced, he said.

(vi) He assured the Vice-Chancellors that if this bill was passed it is not the Central Government that would assume these powers. These would be exercised by a body which would be autonomous in its constitution and working. In fact he said that it would be a statutory body and all the members would command the confidence of the Universities. "It will not be a department of the Government, but it will be a statutory body where the University interests will be fully represented", he affirmed.

III

All this happened in September 1952. For the next year or so the matter continued to be debated within the Government. Once the confidential records of that period are made public, and this would happen within the next few years, it would be possible to study the points of view expressed by various persons connected with this matter. Perhaps the two persons who were actively involved in the whole thing were Maulana Azad and Humayun Kabir. Both of them passed away some years ago and neither of them has left a record of the conflicting pulls and pressures experienced by them. It is only from the records of the Government that it would be possible to reconstruct the details of the arguments which must have taken place at that time. On the one hand was the desire of the Ministry of Education, as expressed through this bill, to regulate standards. On the other hand was the vociferous and persistent opposition of the universities to the proposed bill principally on the ground that it would rob them of their autonomy.

In retrospect, one can see that while the universities have been robbed of their autonomy in any case, this did not happen in the interests of high standards. Before 1947 universities were certainly much more autonomous than they are today. It was indeed a distinguished man who was selected to be the Vice-Chancellor of a University. Once selected, nobody breathed down his neck, nobody whispered anything into his ears, there was hardly any wheeling and dealing and, what is more important, nobody's tenure was cut short because at some point or other be became unacceptable to the powers that be. Universities then were truly sub-systems of the larger system and there was hardly any attempt to run the sub-system in a manner so as to make it subservient to the larger system. If most of the university representatives assembled in this conference protested against the attempt to take away their autonomy, it is but reasonable to conclude that they were thinking of the kind of autonomy that the universities had enjoyed till then rather than of the kind of autonomy which the universities enjoy now-a-days.

Those were the days when the universities were on the whole left free to manage their own affairs. More or less as a concomitant on this attitude; they were hardly given any financial assistance. The universities were expected to have a surplus from the examinations that they were conducting and this was used for running the establishment and may be a few university departments as well. Except for unitary universities, the rest either did not have any departments or they somehow managed to exist. This was the general situation and the demand for financial help was therefore a genuine demand.

In this situation, the Ministry of Education found it difficult to work out a clear course of action for itself. If it established a Central Council, as visualised, and vested it with the powers to issue directives and penalised those universities which did not implement the directives, it would perhaps be violating the autonomy of the universities. And yet if such a central body were not to be established and the universities were to be left to their own devices, the standards would continue to be uneven, indeed unsatisfactory, and the obligation cast upon the Centre to coordinate and determine standards would remain undischarged.

How to resolve this issue? Universities which were starved of funds (and almost each one of them was) required to be helped through the agency of a Grants Committee. A Grants Committee had fitfully functioned for several years. The University Education Commission presided over by Dr. S. Radhakrishnan had also recommended such a body. The planning era was about to begin in Indian economy and it was proposed to help the universities with funds from the Central Government. The obvious agency for such a large scale flow of funds could be a body like the Grants Committee. Clearly, the establishment of such a body would meet the needs of the universities. In the Indian context, such an agency had to be statutory in character. What was easier than to describe it as the University Grants Commission? It could always be referred to as the UGC, a name which corresponded to the UGC in Great Britain. The British model was all the time in the background and nothing appeared more natural to the decision makers than the fact that the agency created in India should also be called the UGC.

To establish a Central Council as envisaged in the bill and to have to defend the Government against the charge of violating university autonomy would have been awkward. All that the Ministry of Education was doing was to concretise one of the provisions in the Constitution, yet this would not prevent the universities from repeating, day in and day out, that something had been imposed on them from above and that they were no longer as autonomous as they used to be. To combine both the functions in one body, the function of disbursing grants to universities as also the function of advising them on how to improve their standards of performance seemed to be the natural thing to do. What was more, the Constitution did not come in the way of adopting such a course of action.

Today it seems natural and indeed obvious that the two functions should have been combined in one body. But let it not be forgotten that there was no precedent for it in any country of the world. Federal funding to universities is a fairly widespread practice. It is to be encountered in several countries and on the whole everybody seems to be happy about it. Universities are chronically short of funds and it is rarely that any university refuses to accept a grant from any quarter unless it is of a highly suspect character. But in no country of the world does the grant-giving agency have the power to sit in judgment upon the quality of performance of a university.

IV

Two other things require to be dealt with here. One is to analyse the UGC bill as adopted in 1956 and see its relationship with the 1951 bill which was discarded. The second is to examine whether the changes made were such as were calculated to improve standards and indeed to what extent the experiment of combining both the functions in one body had yielded good results.

The 1951 bill vested the Central Government with the power of approving or not approving a university established by a State Legislature. The exact wording of the bill was as follows:

> No University established or incorporated after the commencement of this Act by or under a State Act shall be deemed to be a university unless the Central Government, by notification in the Official Gazette, has made a declaration to that effect.

According to the Constitution, education was and is a State subject. It was only in respect of coordination and determination of standards that the Centre had been vested with powers. It was in pursuance of this obligation that this particular clause had been inserted. In view of the outcry against the 1951 bill however this clause was deleted from the UGC Act passed in 1956. To what extent this was a step in the right direction or not should be apparent from one fact. In 1956, the number of universities was almost one quarter of what it was in 1972. There is a good reason why 1972 has been mentioned here. It was in the 1972 Amendment of the UGC Act that the following clause was introduced:

> No grant shall be given by the Central Government, the Commission, or any other organisation receiving any funds from the Central Government, to a university which is established after the commencement of the University Grants Commission Amendment Act 1972, unless the Commission has, after satisfying itself as to such matters as may be prescribed, declared such university to be fit for receiving such grant. (Section 12A).

Two things may be noted here. One, even when the UGC Act was amended in 1970 (the first amendment after 1956), this particular provision was not inserted. In other words, the Central Government continued to be cagey in respect of what the States would say in the matter. Secondly, even when in 1972 the Act was further amended the provision inserted was not as categorical or as far-reaching in its implications as it had been in the 1951 bill. The 1951 bill refused to recognise a university as a university unless a declaration to this effect was made by the Central Government. The 1972 Act (which is still in force) merely empowered the Central Government and its agencies to withhold the release of grants to a university. Which is only a way of saying that a university could come into being nevertheless; only it would not receive any Central assistance. True to pattern, this did not prevent, a few years later, half a dozen universities from coming into existence without clearance by the Central Government, though it must be added in all fairness that the Central Government has not yet given them any grant. Clearly the Centre even in 1972 was not prepared to go as far as it had chosen to go in 1951.

Another provision in the 1951 bill was that it would be open to the Central Government to declare any institution of higher education other than a university to be a university. The existing provision in the UGC Act in respect of an institution 'deemed to be a university' is only a variation upon the original provision. Some of the other provisions were either repeated or slightly modified. For instance, it was stated in the 1951 bill that no institution other than a university would have the right to confer a degree. This was repeated in the 1956 Act. Similarly, one-third of the membership of the Central Council was to consist of Vice-Chancellors. The proposal to this effect made in the 1951 bill was retained in the 1956 Act. This provision has however been whittled down step by step both in the 1970 and 1972 Amendments to the UGC Act.* During the last few years only one or two Vice-Chancellors have served on the Commission. They may be members of the Commission. There is nothing to bar them, but there is no mandatory provision as it existed until 1972.

It was in respect of two other provisions however that the real whittling down was done. One was in respect of directing the universities to take such action as may be specified and the second was in respect of the derecognition of degrees. The first proposal was altogether dropped. As to the second one, the precise proposal made in the 1951 bill was as follows:

> If any university fails within a reasonable time to comply with any directions issued by the Council under Section 7 or Section 8, the Council may advise the Central Government to refuse to recognise any degree conferred or granted by such university for the purpose of employment under the Central Government or for any other purpose.

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*A welcome feature, however, has been the inclusion of working academie professors, as members of commission enhancing its represtative character as well as academic competence for its functions. Ed.

This particular provision made no concessions of any kind. The Central Government gave unto itself the right to de-recognise degrees given by a particular university on the recommendation of the Central Council. That was the only qualifying clause. For the rest the Central Government had the absolute power to de-recognise any degree. This was more or less in line with the power given to the Medical Council of India. The Medical Council Act was passed before the UGC Act was passed. Despite the lapse of so many years the Medical Council still has that power. The power has never been used. Only on one occasion was a particular university threatened with the use of this power. Even there, all that the Medical Council could have done was to have recommended to the Central Government that the degrees of that particular college should be de-recognised. By itself it could not have done anything more. But the fact remains that the Medical Council does have this power and on the whole this fact has had a salutary effect on medical education.

V

It should not be difficult to see that the issue is more political than legal. Legally speaking, the Centre laid down in the 1951 bill that no State university would be recognised as a university unless the Centre approved it. Furthermore, if a university did not carry out a directive issued to it, the Government would have the power to de-recognise its degrees. Today, to quibble about whether the Centre has this power or not, as is sometimes done, is beside the point. Under the Constitution, the Centre has the power. That is why the Centre introduced these provisions in the 1951 bill. Nobody objected to this power on legal grounds. All objections were on grounds other than legal.

If in the UGC Act of 1956 the Centre choose to delete these provisions and did not re-induct them in any of the subsequent Amendments, the meaning is clear. The Centre hesitates to take any decision which would dilute the powers that the States have enjoyed all these years. In 1976 when the 42nd Amendment was adopted and education became a concurrent subject, it had hardly any effect on the Centre-State relationship in respect of higher education. Higher education was already more or less on the Concurrent List. In terms of the power to coordinate and determine standards, the Centre could enforce whatever it wanted to enforce. The 42nd Amendment simply put other sectors of education also on the Concurrent List. The significance of this particular Amendment was not that the Centre acquired more powers in respect of higher education. Those it already had. Its significance lay in the fact that even in respect of other levels of education the Centre now could legislate and this legislation would have precedence over State legislation.

Can one link up the argument with the different points of view held by different political parties? The evidence is not decisive enough to do so but a couple of pointers do exist. It was the Congress Party which sponsored the 42nd Amendment and got it accepted. To that extent the Congress Party may be said to be in favour of a greater role for the Centre. On the other hand, one can see that there has been no follow up legislation of the 42nd Amendment so far and the situation therefore virtually remains what it was. In regard to the Janata Party, there is an interesting tell-tale piece of evidence. The UGC Review Committee suggested that the UGC might be given the power to de-recognise the degree of any university. This was nothing but a reiteration of what had been provided for in the 1951 bill. When the report of this Review Committee came to be processed by the Janata Government, then in power, this particular recommendation was not accepted. The moral is clear and need not be made explicit.

The fact of the matter is that the Centre-State relationship over the decades has developed in such a manner that no political party would find it possible to take a strong line vis-a-vis the States. In 1951, the situation was qualitatively different. The Constitution had been adopted only recently. Different kinds of pulls and pressures had been exerted during the years the Constitution was being hammered out. The Constitution as it finally emerged, in a sense, represented a consensus. In the vision of future India that Jawaharlal Nehru and Maulana Azad had, education was to play a very important role. There is evidence of Maulana Azad urging "Central guidance, if not Central control, on provincial progress" in the field of education. Pandit Nehru's mind also worked on the same wave-length and that is how the Centre came to have the power to coordinate and determine standards in respect of higher education.

To have made constitutional provision, as described above, was one thing. To have created agencies and instruments for the purpose was another thing. The 1951 bill sought to establish an agency for the purpose. It was vehemently opposed by the universities and after a year or so of soul searching and mutual consultations, the Ministry of Education eventually established the UGC in late 1953. For the next two years and a half it functioned as an *ad hoc* agency till such time as the 1956 Act gave it statutory standing.

At this stage, a quarter century after the formal establishment of the UGC, it is legitimate to ask to what extent the UGC has utilised the powers of coordination and determination of standards vested in it. The simplest answer would be that had these powers been put to use even partially the situation in higher education would not have been what it is today. This statement as a matter of fact requires to be qualified. To the extent that the situation today has been shaped by the economic and political forces at work (which is what makes the Centre hesitate to use the powers at its disposal), the UGC could not have done anything to change the situation. But there was a role for the UGC to play and it was the role of an agency acting in the interest of higher standards. In plain words, it could have played the role of a professional body. To quite an extent it did not play this role and, indeed, it allowed itself to be swamped by the economic and political forces at work. These forces cannot be contained even by the Centre. Without question there are elements at the Centre which would like to control and contain them but they feel thwarted and outmanoeuvred by these forces that are too powerful for them. To expect the UGC to have stood up to these forces is to be both naive and unconvincing.

VI

However, there was one way in which the UGC could have offered resistance and that was to act as a professional body. This is precisely what the Medical Council of India has done. It can be nobody's contention that the Medical Council of India has covered itself with glory. At the same time one can see that the situation in medical education would have been much much worse, but for the restraining and professional role played by the Medical Council of India. Can one say the same thing about the UGC? The answer, sad to say, is in the negative.

It would be best to illustrate this point of view with one or two examples. As of today something like 50-60% of the colleges are sub-standard. They have an enrolment of not more than a couple of hundreds and what happens in the four walls of those colleges can hardly be described as education. Now there was no way of regulating the proliferation of these colleges. The colleges were being established because of a certain conjunction of interests between the politicians and educational entrepreneures. The whole thing was rooted in the reality of political life and even the State Government found it difficult to resist these pressures. The stark fact today is that more than 50% of the total colleges in India are intellectual and social slums and they are as difficult to take care of as it is difficult to convert slums into habitable areas in a city.

All this is undeniable but what justification is there for the fact that, after more than a quarter century of existence, there is no set of rules covering the establishment of colleges. Even though some 'norms' have been developed by the Commission recently. There should have been no difficulty about convening a meeting of principals and vice-chancellors and laying down a certain set of ground rules to govern the establishment and affiliation of colleges. Even the Central Advisory Board of Education would have eventually accepted most of them, though in the process quite a few of them would have been watered down. And yet it was left to the Review Committee (which submitted its report in 1977) to suggest that a set of ground rules ought to be prepared. Even four years after that report was submitted the item is still to be put on the agenda of the UGC.

Another illustration, the UGC Review Committee suggested that standards of performance at the Ph.D. level called for some regulation. Now this is purely a professional matter. What rules and regulations are laid down in this behalf and how the evaluation of the thesis is done are matters which are totally professional and do not admit of any other consideration. Even in this respect however an adequate initiative by the UGC is yet to be taken.

The point made here is that it is only as a professional body that the UGC can exist and function and be effective to some extent. If it ceases to be professional or allows its professional judgment to be influenced by political considerations, sooner or later its effectiveness as an instrument of coordination and determination of standards would decline. This is precisely what has happened and this is precisely what ought not to have happened.

Indeed one criticism often made in respect of the UGC is that it acts only as a grant-giving body and has seldom given serious attention to the problems of coordination and determination of standards. The illustrations given above point in this direction. But there is a prior question to be asked here. Is this mode of functioning by design or by accident? Unless the history of the last quarter century can be wished away, it would seem that this is hardly an accident. Over the years the UGC has made a virtue of leaving the universities to act on their own. Not only that, non-intervention has been elevated into a principle. It can be nobody's contention that the UGC ought to lay down the law as far as the universities are concerned. Such a policy would ultimately inhibit the growth of universities and that is why this policy should be eschewed. At the same time, it is equally wrong to let every university function as if it were a law unto itself.

This philosophy of functioning (or shall we call it non-functioning?) is at variance with what the founding fathers of the Indian Constitution had visualised. There is enough evidence in the Constituent Assembly debates and other papers connected with the framing of the Constitution to show that the Centre visualised a positive and forward-looking role for itself in respect of higher education. That is precisely why Entry 66 in Schedule VII was inserted. If the Centre were to play only a passive role and everything was to be left to the universities concerned, there would have been no need to provide for coordination and determination of standards by the Centre.

At the 1952 meeting of the Vice-Chancellors who opposed the 1951 bill, almost every single speaker argued that it was for the universities themselves to regulate their own affairs and that it was unthinkable for any outside agency to issue directives to them. Representing the Centre, Humayun Kabir argued, rather weakly, that it was no one's intention to interfere from the Centre and all that was being done was to create a Central Council which would be an autonomous body and would function in close collaboration with the universities. Humayun Kabir argued along these lines but there was hardly any body of precedents for him to assure the universities that their fears were unfounded and that all that the Centre meant to do was to be helpful. If the Ministry of Education had been more resolute about their original intention, the situation could have been distinctly better than what it is today. But it appears that both Maulana Azad and Humayun Kabir allowed themselves to be persuaded against their better judgment.

VII

How does one strike the balance-sheet? One thing is definite. No government in the foreseeable future would be able to adopt the posture that had been adopted by the Central Government in 1951. In plain words, even though the Constitution permits the Centre extensive powers in respect of higher and professional education (the right to de-recognise degrees for instance), those are not likely to be exercised today. They could not be exercised even in 1951. In 1981 the situation has undergone almost a sea change.

At that time opposition to the powers sought to be assumed by the Centre came from the universities. Only one State Government was opposed to it. Today almost every State Government would be opposed to it. As to the universities, even though they are battered day after day by the State Governments, not many of them are likely to take the unqualified stand that the last word should be with the Central Government.

What is to be done in this situation therefore? To treat the UGC mainly as a grant-giving body, as has been the practice hitherto, would be to circumscribe its functioning. Indeed such an approach cuts at the roots of the unique experiment launched by India in 1950. This must not be allowed to happen. At the same time one has to be realistic and understand the parameters within which academic change can be brought about. The UGC can function as a body which determines and coordinates standards provided, and this is an important proviso, it is protected as well as insulated against political pressures. To the extent that this requires some kind of self-abnegation on the part of political parties, one may not be too sanguine about it. But to the extent that the UGC itself can function as a non-political organisation, this is perfectly feasible. Perhaps the right way of putting it would be that the UGC should function as a professional body. Even when there are pressures exerted on it those should be met on the professional plane.

There would be limitations, nevertheless. The analogy of the Medical Council of India is correct but upto a point. The composition of the Medical Council is, on the whole, professional in character. In the case of the UGC the professional element is almost absent and all said and done the UGC is treated as a limb of the Government. Notwithstanding this difference in composition and, by implication, in its outlook, the UGC deals with a sector of activity where its effective functioning depends upon the extent to which it can be professional. If it is professional in its orientation and programme of work, there is no reason why its performance should fall short of its promise.

As stated earlier, the issue is political rather than legal. In legal terms, the utmost power that the Centre has given to the UGC is to withhold grants whereas there are many more powers which the Centre could have given. This has not been done for reasons which are entirely political. Universities functioning on their own cannot fight these political forces. By the same token and more or less for the same reasons the UGC with its limited powers is obliged to come to terms with these forces. It would be an over-simplification however to assume that the battle is lost. This is not so and that is for two reasons. For one thing, over the years the UGC has acquired a kind of standing in the country which can always be put to good use. For another, what the UGC has to do is to function as a professional body. Once it does so it would have enormous leverage with everybody concerned. The important precondition however is that it must function as a professional body.

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Examinations of Union Public Service Commission vis-a-vis Higher Education in India

M.L. SHAHARE AND T. RAMASAMI

The Commission have two main modes of recommending candidates for employment in the various ministries of the Government of India; one is selection by competitive written and oral examinations for lower and middle cadres and the other is by recruitment of technical specialists mostly by oral tests to relatively higher cadres.

The following discussion pertains to only the former mode of recommendation.

(*i*) *Interaction of the Commission with Academic Institutions:* The academic institutions come into play at almost every stage of test-development of Commissions' examinations. A particular examination might have test-papers in several academic disciplines. The academic experts from various institutions are made to actively involve themselves with:

(i) syllabus framing;
(ii) item-writing;
(iii) preview and selection of items to acceptable lots;
(iv) final selection and assembly into a formal operational test;
(v) moderation or smoothening of undesirable elements in the test or Answer Sheets; and
(vi) syllabus revision and updating to take into account candidates' representations and as well as to modernise the syllabus content in a cyclic manner.

Lastly, academic experts with highly specialized training and experience are also involved in oral interview/personality test/viva-voce, as part of the interview board or committee.

In this manner, academicians are made to know the reforms embodied in the Commissions' as well as Ministerial objectives, thereby positively influencing higher education in India.

The use of experts or academicians from institutions of higher education is made more effective by the Commission by involving them in test-development skills. Thus, work-shop training is given at representative centres in various regions of the country to improve their skills in all the relevant stages of test-development starting from item-writing. This is especially true for test-development involving the objective type multiple-choice format. Though psychometric expertise, as needed for test-development, can fully originate from the internal resources of the Commission, namely through officers concerned with test-development within the Commission, it is the Commissions' view that the subject matter specialists themselves equipped test-development skills become ideally effective in producing high quality test-papers.

(*ii*) *Influence of the Syllabus of U.P.S.C. Examinations on University Curricula:* The importance of the Commissions' examinations to students undergoing higher education cannot be over-emphasised. Employment after getting educational degree/qualifications should perhaps be the single most important objective of all recipients of higher education. Therefore, the syllabus followed by the Commission should have a great impact on the curricula of the various universities.

The Commission conduct about twelve examinations, sometimes, one or two or more, if and when additional Central Government Ministries notify vacancies. Out of the twelve or so examinations, three are at about the level of matriculate curricula.

These examinations are:

(i) National Defence Academy
(ii) Special Class Railway Apprentice
(iii) Stenographer's Examinations

Barring these, remaining nine influence curricula of institutions of higher learning. These examinations can again be divided into:

(A) "journalist career" examinations;
(B) "professional/technical" examinations.

Under category-A, the following can be enumerated:

(i) Civil Services examination
(called previously as "IAS and Allied Services" examination)
(ii) Assistant Grade examination
(iii) Combined Defence Service examination
(iv) Indian Forest Service examination

Under "professional/technical" examinations, the following can be enumerated:

(i) Combined Engineering Services examination
(ii) Combined Medical examination

(iii) Indian Economic Service examination
(iv) Indian Statistical Service examination
(v) Geologists' examination

In the preceding list, entries (iii), (iv), and (v) are of Masters or Post-graduate level. The number of test-papers, their composition, their weightage in terms of maximum possible marks and even syllabus to some extent are dictated by the Ministries' requirements, though completely planned and executed through the aegis of the Commission. The syllabuses are framed by a panel of academic experts from the institutions of higher learning with regional representation.

The fact that General Knowledge is one of the test papers in almost all of the Commissions' examinations (except in Combined Medical and Geologists' examinations) would go to emphasise the need for liberal and broad-based higher education.

The science candidates, thus, are required to be made aware of important land-marks and developments in Indian History, Political Science, Economics, etc., that may be considered as Humanities disciplines. Similarly, the students of the latter disciplines are required to be knowledgeable about the basic facts and principles of Science, Agriculture, Engineering and Medicine. Of course, the relative emphasis would vary depending on the particular examination; for example, the General Knowledge paper of Economic Service would place lesser emphasis on Science, Engineering, Medicine, certain aspects of Geography-science and History, and greater emphasis on Agriculture, Industry, Five Year Plans and Constitution etc. The criterion of relevance to on-the-job skills is perhaps the single most important desideratum in the decision of according differential weightages under the various sub-heads of the General Knowledge paper within a particular examination.

STRENGTH OF CANDIDATES IN U.P.S.C. EXAMINATIONS UNDER CATEGORY—'A' & 'B'

SN.	*Name of Exam.*	*Total No. of candidates appearing at 1979-80 level*	*No. (& %) of canditdates interviewed*		*No. (& %) of candidates recommended for appointment (No. of vacancies)*	
1.	Civil Services	67,615	1420	(2·1)	703	(1·0)
2.	Assistant Grade	15,582	*		350	(2·2)
3.	Combined Defence Service (twice a year)	13,248	720	(5·4)	720	(5·4)
4.	Indian Forest Service	3,851	246	(6·3)	100	(2·6)
5.	Combined Engg. Service	4,219	1361	(32·2)	668	(15·8)
6.	Combined Medical	8,449	1437	(17·0)	792	(9·3)
7.	Indian Economic Service					
8.	Indian Statistical Service	1,299	192	(14·7)	80	(6·1)
9.	Geologists'	870	246	(28·2)	104	(11·9)

* *There is no interview/oral test for Assistant Grade.*

(*iii*) *Scheme of Commissions' Examinations Rationale for Use of Academic "Achievement" Tests:* Most, if not all, of the Commissions' examinations are based on testing of achievement level in academic disciplines in terms of rank of the aggregate scores of the component test-papers within any specific examination. The Commission are stressing the quality of their test-papers to include mostly those items or questions with application-potential so that the relevance aspect of testing is more or less well taken care of. The system of pooling high quality items into a "bank" also facilitates progressive improvement in the over-all standards of Commissions' subsequent examinations.

For the reasons given in the footnote*, the Commission are at present using a judicious blend of relatively purer forms of academic "achievement" tests with application-potential items so as to yield "aptitude" type tests. These tests, coupled with General Knowledge/General Studies test-papers, make the examination more broad-based and with greater relevance to on-the-job skills than otherwise possible.

The Western psychometricians are beginning to realise the importance of a test of the type of "general knowledge"/"general studies"/"general awareness" (vide Cunningham & Birren, 1980), while in India, we have been using them for quite some time.

(*iv*) *Rationale for the use of Objective-type Tests:* For several major reasons, the use of objective type tests has come into being in the Commissions' examitions. One is the fact that the Commission are faced with the problem of explosion of numbers making it virtually impossible to restrict themselves to conventional essay type examinations which otherwise involve somewhat subjective human valuation/scoring of the Answer Scripts on a massive scale. The possibility of *objective scoring* in objective type examinations enables handling of large volumes of Answer Sheets in a quick, convenient as well as reliable and objective manner so that results can be announced in time.

The second reason pointing to the necessity of the use of objective type tests is breadth and depth of syllabus coverage. The inherent character of objective-tests in tapping of pointedly focussed and specific areas of a given syllabus makes it possible to test a candidate both extensively and intensively from a given syllabus and therefore to get a more reliable/dependable picture of his/her true achievement level.

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*"Intelligence" and "aptitude" tests are neither needed nor practicable. While the so-called "intelligence" tests may have a definite bias against the rural segments of the candidate population and may undesirably reach soon a saturation level of stereotype, the "aptitude" tests are in fact short "achievement" tests, specific to the job demands. The "aptitude" tests have the de-merit of being unreliable, expensive and time-consuming to construct, though perhaps more "valid" than academic "achievement" tests. The 'aptitude' tests may also have a slight degree of discrimination against the rural candidate-population, if not as much as in the case of "intelligence" tests.

Even Western psychometricians are beginning to feel dis-enchanted with the traditional "intelligence" tests which have been developed specific to Western culture's restricted or limited set of psychological dimensions (vide Cronbach & Drenth, 1972).

The criticism that objective tests allow guessing in passing through does not constitute a strong argument since especially in Commissions' examinations, the selections-ratio and therefore the qualifying marks are rather stringent, the former being low and latter being high. A fair idea of the selection ratio would be seen from the last two columns of the foregoing table.

Moreover, the objective type examinations are used as a supplementary and complementary adjunct to older traditional essay type examinations in most of the higher level Commissions' examinations. An additional set of dimensions of psychological/mental process capabilities of the candidates can thus be usefully and meaningfully tapped.

Raza and Kundu (1980) have also noted, among others, the value of objective type items as one of the important "tools of evaluation" in higher education.

(*v*) *Impact of Commissions' examinations on Indian higher education:* From the foregoing discussions, it should become more or less clear and obvious that very high standards of academic achievement are being set by the Commission in their examinations vis-a-vis varying quality of education being received in more than 120 or so institutions of higher learning in the country: that is, the Commissions' examinations have the indirect effect of homogenising as well as elevating the standards of the curricula of the academic institutions of higher learning. To be more explicit, homogenising and elevating of the standards take place because of: (i) intensive and extensive coverage of the syllabus in the Commissions' examinations; (ii) the fact that a minor fraction of meritorious candidates get selected.

The Commission and universities have perhaps a symbiotic relationship in influencing each other in areas of syllabus, curriculum and future direction of evaluation/examination systems in particular and academic standards in general.

The Commissions' examinations, especially of the multiple-choice type, are noted to have influenced directly or indirectly several Indian universities who have also introduced objective type tests and instituted and institutionalized examination reforms cells. More vigorous and rigorous reforms movement in examination system of higher education is taking place (vide IUB/AIU (1971), Mathur (1980), Srivastava (1979).

Specialists of certain disciplines are becoming either too few or too many. It would be necessary in future for the universities to start additional faculties/departments, where there is manpower shortage, both to patronise specialists as well as additionally train students in these disciplines. Thus disciplines such as Ship Building, Naval Architecture, Marine Engineering, Mining Engineering, Nuclear Engineering, Armament Technology etc., may perhaps fall under this category.

Conclusion

Because of the fact that the Commission is a Constitutional quasi-judiciary body, formulating and implementing personnel recruitment for public services through the use of written and oral tests involving command of useful knowledge, institutions of higher learning are given indirect or implicit feed-back to gear their curricula to suit the needs of candidates in obtaining bread-winning employment. Employment opportunities being so limited in relation to the population of masses, the importance of a public examining body such as U.P.S.C. shaping the curriculer pattern of higher education in India would become more and more apparent and critical as years go by.

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Higher Education: A Perspective from the Periphery

G. RAMAKRISHNA

We are used to mesmerising figures, percentages of growth, plan outlays and performances etc. Even so, the staggering state of professional education in Karnataka will surprise such educational statistics. A similar picture emerges if we look at the figures relating to ordinary institutions of higher education, some of which are incidentally of very poor quality. The Governor as Chancellor of the three universities in the State (now five), had appointed a committee to review the functioning of the universities headed by Dr. K.N. Raj. It has recently submitted its report from criticising the capitation fee approach(*) and the practice of the government in sanctioning affiliation to colleges without holding any consultation with the university concerned. The Raj Committee has tabulated the pattern of growth in student enrolment over a decade or so which makes interesting reading, especially if we are prepared to draw the necessary conclusions.

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* Karnataka has the dubious distinction of having started two new universities in 1980 without obtaining the concurrence of the University Grants Commission. These universities and the State Government are presumably trying their very best to exert pressure on the UGC to obtain a *post-facto* sanction so that developmental projects, if any, might duly receive the financial support of the UGC. The State has also the unfortunate and unenviable distinction of having the maximum number of professional colleges, both Engineering and Medical. As many as five new medical colleges under the aegis of five different caste groups are under sanction at present. The private managements of these institutions of higher learning are granted permission to collect capitation fee at the rate of Rs. 1·6 lakhs per seat. It is not unlikely that the fluctuations occur in the closed market depending on the degree of demand and supply. It would appear that Karnataka has taken upon itself the burden of producing all the engineers and doctors that the country needs. A liberal supply of these personnel to other countries also is assured. The professed policy is to produce so many doctors indeed that some of them at least will be forced to go to the villages . (Chief Minister on 2nd December, 1980 at a Press conference in Bangalore). It is difficult to imagine which village the doctor will prefer to serve in after investing Rs. 1·6 lakhs at the initial stage to enter a medical college. Chances are that he (or she) will have preference for a big village called the United States of America or Kuwait, if not Sweden. Which class of students will enter these colleges, apparently sanctioned in order to make the respective caste groups educationally forward, is also not hard to guess. The impoverished 47 per cent of the Indian population, consisting of all caste groups, has never dreamt of entering the portals of these imposing centres of learning. Of the remaining 53 percent, which section can afford to pay the capitation fee of Rs. 1·6 lakh, is not difficult to surmise.

The student enrolment for university courses which was approximately 16,000 in 1956 increased to about 50,000 in 1965 and to 150,000 in 1973. The number of colleges and teachers also increased considerably during this period. The rate of growth of enrolment in undergraduate courses between 1965 and 1973 was 20 per cent per annum. From about 120 undergraduate colleges (government and private) that the State had in 1963-64, it increased to about 300 in 1973-74 and presently there are around 350 colleges.

The Raj Commission has observed that irrespective of the fact as to whether universalisation of enrolment for primary school education has been achieved or not, the fact remains that only about half of those who enter the school complete four years of schooling. The other half goes to the grazing fields behind buffalos and sheep, to the farm lands to eke out a living, to the forests to collect twigs, or to the hotels to clean utensils and wash the tables. They contribute to the total work force in the country and enlist themselves among the 47 per cent of people at or below the poverty line. One out of seven who join the primary school reach the final year of the secondary school. Many of them even pass the SSLC examination and the number of those accomplishing this intellectual feat has been constantly on the rise. In fact, it is pointed out that the passes in SSLC have increased at the rate of 9 per cent per annum in some cases. About 60 per cent of those appearing for the examination used to fail in 1973-74, but their number came down to 45 per cent by 1978-79. A majority of those who pass SSLC continue their studies for the pre-university in the 10+2 system of the state. As in most of the rest of the country about 3 to 4 per cent of those entering primary school find themselves in institutions of higher education in course of time. This 3 to 4 per cent, the Raj Commission underlines, belongs to the top decile income-wise, or at best to the top two deciles, of the population. Of course, thanks to some piecemeal measures to guarantee social welfare to the long oppressed masses of the country, for whom lip sympathy has never been wanting, there are a few from outside the top two deciles also among students enrolled in institutions of higher education. But that number is very small. From the very much lower deciles, the number is miserably poor. Let it be remembered and conceded that this results from the fact that those from these groups who join primary school are handicapped both by their economic and cultural disadvantages and by their elementary and secondary education problems.

At the national level two valid claims of doubtful merit could be made, namely, that (a) India occupies the third position in the world with respect to technical and scientific personnel and that (b) spending on higher education has successively increased. Fulfilment of the plan targets and even surpassing those targets sometimes is the special prerogative of the field of higher education in the country.

The Fifth plan document had observed (draft : P. 25; 2·94) that "it is essential to ensure the employability of those who receive higher education as well as mitigate its *upper caste and upper class bias*" (emphasis added). Whether this has been translated into action, and if so to what extent, needs to be assessed. In its review of the fourth plan the draft admitted under the section of General Education (Vol. 2, page 191; 8·2) that "the targets laid down for elementary education were not fulfilled. The anticipated enrolments in secondary education also showed a shortfall but those in higher education were exceeded". This is a straightforward answer to the main questions in the field of education: education for whom ? and, education for what? It is education for the upper classes, and education for assisting the continuation of exploitation and inequality.

Social Freedom of Higher Education

The crux of the problem lies in the very purpose of our educational system. Gunnar Myrdal has the following observation to make: "Much education in under-developed countries, following the pattern of colonial times and fashioned to serve the interests of the metropolitan power and the upper and middle classes that were privileged under its reign, is frankly anti-developmental, particularly because it makes the educated unwilling to soil their hands" ("The Human Dimensions of Economic Growth" in *People's Action,* Vol. 7, No. 3, page 16). In simple words, elitist education prepares the instruments of the property-owning, exploiting, ruling class. As long as the technical and scientific personnel with a fairly sophisticated training is made available for manning the profit-earning productive machinery through institutions of higher education, the ruling class could not care less as to what happens to those in the lower rungs of the ladder, whether they remain illiterate or semi-literate, and whether their manifold potentials flower out and become manifest or not. We may go about making lofty declarations of objectives without in practice effecting any change in our real policies. The role of university education as an elitist symbol and social prestige was recognised by the Planning Commission also. It outlined the dual purpose of university education: "The main strategy for the development of university education will, therefore, have to be such as to ensure that, while the social demand for higher education, particularly for satisfying the rising expectations of the newly emerging socio-economic groups, continues to be met, indiscriminate expansion of facilities is not allowed to further dilute the standards of university education". (Draft Fifth Five Year Plan, Vol. 2 page 198; 8·38). The situation today is that this has been completely ignored in order to pacify political pressure of groups quite frequently. If university education bolsters the social prestige of certain individuals, the running of institutions of higher learning by some private managements contributes to their increased political prestige and standing. The casualty is education itself, both higher and the one before that. Proliferation of colleges cannot be accounted for on the basis of any other plausible hypothesis.

The unfortunate fact is that the UGC which is a body meant for maintaining some minimum standards is systematically bypassed. As noted earlier, even new universities are created without so much as consulting the UGC. That is how statutory bodies are respected. It is not the fault of the UGC if the dimensions of growth take a lopsided turn, because the powers of the UGC are limited. Those who created the UGC choose to ignore it when it suits them. Where we academics have erred is, perhaps, in not raising a voice powerfully enough to stop such proceedings. Our immediate interests have blurred our long-term vision and direction. It may be profitable to again refer to Gunnar Myrdal (*Op. Cit.* P. 16) who had this to say regarding the trends in education in under-developed countries. "All governments eagerly expressed as their primary goal to stamp out illiteracy within a very short time. What has actually happened is, however, that usually university education has increased most rapidly and high school education next, while primary education has lagged—this is in spite of the fact that tertiary schooling and secondary schooling, in turn, are some three to four times more expensive than primary schooling. All schooling at all levels is still mainly of the general literary academic type, while vocational and professional schooling has been increasing only marginally". This reprehensible trend is to be seen in every economy bereft of genuine socialist moorings. A five comment on the perspective of education was made by F. Engles in the characteristic cryptic style as early as in 1845. Said Engles: Since the bourgeoisie vouchsafes them (the workers) only so much of life as is absolutely necessary, we need not wonder that it bestows upon them only so much education as lies in the interest of the bourgeoisie; and that, in truth, is not much". Proceeding further he gave a picture of the niggardly schools, the worn out teachers, lack of moral discipline and total absence of public supervision, all of which is *mutatis mutandis* very true of our own situation of today. Engels concluded that this could not be otherwise as "the bourgeoisie has little to hope, and much to fear, from the education of the working class" (*The Condition of the Working Class in England,* Progress Publishers, Moscow, 1973, pages 149-150). It may be noted in passing by way of an additional illustration that the percentage of increase in the Fifth Plan outlay on education over fourth plan expenditure was 119·5 (IV Plan Expenditure: 786 crores of rupees; V Plan outlay: 1726 crores.—Reduced to 1284·29 crores in the 1976 document, the real percentage of increase being about 64).

The percentage of increase envisaged in the fifth plan outlay over fourth plan expenditure on secondary and university education respectively was 72·1 and 72·8, a slight weightage in favour of university education. While the UGC might naturally welcome encouraging allocations for higher education in the plan outlays or annual budgets, those in the States, universities, and undergraduate colleges affiliated to the universities will be actually interested in the pattern of channelisation of these funds.

Post-graduate Education and Research

Before touching on the role that the UGC might fruitfully play in the context of channelisation of funds and also shaping the destiny of higher education in the States, we may have a word on the question of Post-graduate education and research as viewed by the Fifth Plan document which said (Vol. 2, page 199; 8·41 and 8·43) that "the various universities in a state would need to collaborate to provide, without unnecessary duplication, post-graduate facilities in various subjects at a fairly high level of excellence". Apart from the fact that duplication in research has tended to waste our precious resources quite often, it is also noticeable that research in social sciences and literature has been allowed to proceed along narrow and obscurantist lines not infrequently. Giving the proper scientific orientation to research in humanities must be as much the responsibility of a body like the UGC as financing a research project is. The talk of coördination between the research wing of the universities and the production wing of Industry still remains an unrealised objective. A closer collaboration between universities and the National Committee on Science and Technology has materialised although there is scope for further improvement there also. No body other than the UGC could possibly act as the cell to bring about this much needed coordination at a higher and more meaningful level. An even more crucial task for the UGC is to positively avoid wasteful expenditure through duplication of teaching programmes in the new universities which have an inevitable urge and fascination for starting departments in a stereotyped manner. There is no reason why every new university should have the departments of English, Sanskrit, Philosophy, Hindi, Urdu, Psychology, Anthropology, Linguistics, etc. Students of a given region should be awarded scholarships to pursue their studies in these disciplines in some neighbouring university where the teaching programme in those disciplines already exists, instead of starting new departments in all the new universities from scratch. Universities should be task-oriented if our resources are to be employed for obtaining the best returns. It is for the UGC to put a stop to this highly mechanical and conventional approach to the concept of a university.

Problems of Colleges

Willingly or otherwise, somehow the UGC seems to have its heartland as distinct from its outlying areas. This might appear to be a harsh judgment, but the data justifies the conclusion. There are circulars from the UGC regarding awards of fellowships and the like offered by the UGC which reach undergraduate affiliated colleges of Karnataka long after the last dates for making applications for the awards. Additionally, for the undergraduate affiliated colleges, there are also the super-scholars in the university proper who present stiff competition by virtue of their being in the university. This direct link between the university and the UGC and the lack of it between the UGC and the affiliated colleges should not be allowed to militate against the affiliated colleges and the staff therein. It must be acknowledged that scholarship is not concentrated in the universities proper only. Representation in UGC academic, administrative and advisory bodies is normally the special privilege enjoyed by the staff of the universities, which is absurd. The feeding centres, namely the affiliated colleges, must enjoy an equal status. In some universities, as in Bangalore University for example, even a nominal permanent affiliation is not granted to the affiliated colleges even after a decade's useful existence. This blocks the path of seeking UGC assistance for their programmes but the university remains unmoved. In such cases, the UGC ought to directly establish communication with such institutions, appoint their own committees to inspect the colleges, and render whatever assistance they deserve.

I have earlier referred to the unique practice of the Government of Karnataka in unilaterally granting affiliation to colleges without consulting the universities concerned, as also the State establishing new universities without consulting the UGC. These are corollary to each other. A State which ignores the UGC may hardly be expected to have anything but a scant regard for the universities within the State. The UGC must unyieldingly stick to its stand of not taking notice of new universities started without its knowledge. This is the least that is expected of the UGC in the interests of academic discipline. Further, the UGC can refuse to assist colleges which come into existence without the prior concurrence of the university concerned. At the same time, the UGC ought to show its utter displeasure over the capitation fee menace by blacklisting colleges adopting that practice. This might ultimately lead to some confrontation with the State Governments or even the Centre's but that must be faced in the interests of academic integrity and sanctity.

College Improvement Programmes

A wholesome project conceived and executed by the UGC during recent years is the Faculty Improvement Programme for the benefit of teachers in affiliated undergraduate colleges. The bulk of it, however, is stealthily monopolised by the university itself for its own staff (after having recruited non-Ph.D's). Secondly the recipients of the Faculty Improvement Programme benefits migrate to the cities from mofussil areas after availing the benefit through the mofussil colleges. It is a pity that the UGC has been a party to both these kinds of practices, because both negate the fundamental objectives which prompted the UGC to initiate a programme of this kind. They lead to *impoverishment* rather than *improvement* of the colleges which are at the periphery but are in fact the real base of higher education.

Another equally misplaced emphasis of the UGC based on a basically erroneous approach is the method of sanctioning COSSIP grants (humourously described as gossip grants sometimes) to affiliated colleges. The mask of the alleged qualitative improvement in these colleges to justify this scheme and a few other similar ones is always very handy. "To those who have, more shall be given"—This is the motto of COSSIP grants in a nutshell. It is part of the framework of elitism in higher education, for these grants are made available to develop colleges only in the main. The draft fifth plan document had laid the foundation for such elitist adventures by forcefully putting forth a plea in favour of selected institutions being "recognised as autonomous colleges for promoting innovations in curriculum, methods of teaching, evaluation of students, etc." (Vol. 2, page 199; 8·44). The same point is made elsewhere too (Vol. 2, page 193; 8·12): To promote experimentation and innovation at the university stage, certain institutions will be selected and given the status of autonomous colleges. Institutions/departments having high potential for developing excellence will receive special assistance". Is it altogether incorrect to view the COSSIP grants as a preparatory innovation for leading some affiliated colleges towards autonomy? The whole scheme promotes not only the avoidable elitism (which is not the same thing as excellence, incidentally and nobody is against excellence) but culminates in a farcical burlesque in the context of many states including Karnataka.

The degree of autonomy enjoyed by the universities is itself rather insignificant, even allowing some margin for variations among the states. Moreover, under existing circumstances what is the advisable degree of autonomy that could reasonably be allowed? And in this background we are to have autonomous colleges under the jurisdiction of universities which enjoy autonomy only theoretically. This step also discounts the possibility of having two streams (of excellence and non-excellence, if you want to call them so) under the same centralised set up of the university. Instead of broadening participation through a further democratisation of academic administration in colleges and universities, an easy solution is presented in the form of autonomy of colleges. What the universities failed to achieve, these colleges, it is hoped, will accomplish with ease! The earlier quoted report of the Raj Committee has not worked out the statistics relating to the classes represented in the prospective autonomous colleges of Karnataka. But it is a safe bet that the upper classes are even more dominant in these colleges than in the system as a whole. An authority like the UGC is capable of devising suitable means for the consolidation of academic excellence within the existing structure by creating two streams in any given course. This is any way better than inflating the power of private managements which run institutions with public money. Autonomy of colleges is precisely going to lead us to that end. In the economic sphere, the joint sector concept of some highly imaginative monopolists was rejected before it gathered momentum, but the UGC scheme of autonomous colleges implements it in the administration and organisation of universities. It is time the orientation is re-defined keeping socialist goals in view.

Another important practical step the UGC can take is to establish a national curriculum and evaluation programme cell as one of its wings to streamline the contents of courses in universities and colleges.* The same cell could also attend to the standardisation of examinations to ensure corresponding levels of achievements at all stages and in all the states. The participation of teachers of the younger groups from affiliated colleges in this cell will go a long way in making it a purposeful body.

The UGC is ultimately the custodian of academic needs and values in the field of higher education in the country. It should function as such if our desire to leave the field better than we found it is to be fulfilled. The guidelines for structuring university bodies should, therefore, be the function of the UGC. There are some States (Karnataka for instance) which have flouted every single guideline given by the UGC's Gajendragadkar Committee with respect to the constitution of university bodies. It is the unprescribed duty of the UGC to act as the sentinel of democratic and academic norms within the universities; and with that object in view, the UGC could analyse the Acts enforced by different states while establishing universities and use its fullest authority for getting the best Acts possible under the circumstances. This is as important as protecting service conditions of the staff in universities and colleges (including the ludicrously named minority institutions), getting uniform scales of pay implemented for all categories in universities and colleges, and initiating programmes for the improvement of qualifications among members of the staff. For the states where the Government rides roughshod over the universities, it is the UGC which should act as the beacon light by throwing its weight in the right direction. It is through interventions under such circumstances that the UGC will grow in strength and stature. This is the only asset higher education can aspire for in this country right now.

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* The work of the subject Panels and examination reforms programme of the Commission seems to be in this direction. The fact that the author has not felt its impact or finds it inadequate illustrates the point made elsewhere by him that colleges should be more deeply involved in these activities—Editor.

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Politics of Academics—A Comparative Review*

ASOKE BASU

Knowledge has been institutionally linked with social order throughout history. The *literati* of China, the *Brahmins* in India, the intellectuals of Hellenic polis-culture, and the Rabbinical scholars of *Yashuv* exerted political influence through the control of knowledge. "Such knowledge", said Max Weber (1958: 139), "was magical and ritualistic in character, deposited in a holy literature, written in a holy language remote from that of everyday speech". Thus did men of knowledge secure their position as a privileged "status group" apart from others and aligned with established order. They formed the clergy of pre-industrial Christian Europe (Troeltsch, 1960; Cohn, 1970; Momigliano, 1975) where they defended tradition against heresy and tried to maintain the conscience of the community wherein lay their authority.

The decline of theocracy advanced the political base of men of knowledge but did not diminish their power. The universities provided training in secular politics for those who aspired to the royal service. "The love of letters brings only a few to the colleges", complained one official in 1638 (Kamen, 1975: 556; see also Kagan, 1974; Peset & Peset, 1975).

The French Revolution marked the end of the natural association of intellectuals with the established order and made clear the need for new tactics of an increasingly adversely nature (Brombert, 1960; Clark, 1973). Their political activities and associations were increasingly varied (O'Boyle, 1970; Lipset & Basu, 1975) and had an increasingly "applied" emphasis (Geiger, 1949). An adversary and utopian character became more pronounced (Malia, 1972: 206-216). As knowledge had maintained the *status quo*, it might also be enlisted to change it. A century of frustration was redeemed for many in the success of the Bolshevik Revolution. Ideas *could* shake the world (Pipes, 1968; Venturi, 1960).

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* Condensed from his monograph Culture, Politics and Critical Academies (New Delhi) (Forthcoming).

Universities in America and the Third World have maintained this ambivalent heritage, providing theological and technical support to both colonialism and nationalism, established order and radical change[1]. The perception that the politicization of the university is a recent development ignores most of the history of the academy. It has always been politically involved. Its alignments and, more interesting, the basis of its authority, have changed; but its political role has persisted.

The original grounding of academic authority in religious ritual has been perpetuated to some extent into the 20th century, most notably in the tactics of professionalism. A secular mystique of a specialized body of knowledge in an arcane language accessible only to those properly initiated still serves, with decreasing effect, to legitimize the work of Doctors and Educators. A somewhat different tack was taken in the attempt to develop authority from Science. Scientific Method was seen as an infallible, universal, guarantor of authoritative knowledge. Though recent critics have found in it the secular equivalent of religious ritual and professional mystique, scientific method was in principle available to all and not just to a select priestcraft. Science also provided a temporary salve for the political ambivalence of academia by promising value neutrality. Belief in the neutrality of the academy, however, has been more prominent among academics themselves than among other participants in the political arena. Attempts to develop social indicators beyond the narrow realm of Gross National Product have met with considerable skepticism. Even the Bureau of Labor Statistics has often found that the only data accepted as neutral was the banal or the useless (deNeufville, 1975). The fate of "expert testimony" in court has been similarly problematic. Current debates within the academy on the limits of scientific objectivity are likely, at least in the short run, to make further difficulties for academic claims to authority and hopes for political influence outside the academy.

Before speculating on the future of academic authority, we must know more about the direction of academic politics.

Statement of the Problem

The Academy reflects societal values and, in turn, becomes an important source for the development of a nation's ethos. Our review begins with this assumption. We surmise that the academics' politics is rooted in the historical-cultural development of their nation. The question is then, within the socio-cultural framework, where do the causal roots of academics' political orientation rest? This review, with the aid of comparative secondary studies, will attempt to answer this question by examining the academics' two main structural rootings: (a) Factors relating to the academics' social background—an important source of recruitment to the academy, and (b) conditions affecting the academy and his relationship to it. In explaining the social basis, we are interested in religious background, age, and parental socio-economic status. Regarding the factors related to the academy, we have directed our attention to disciplinary orientation, institutional status, academic culture, and participation in university and national/international affairs.

Findings

In the industrial nations of the United Kingdom, the United States, Italy, West Germany, Sweden, and Australia, the following is the self-described, political position of the academics:

Table 1

POLITICAL AFFILIATION OF THE ACADEMICS, IN PER CENT

	Liberal	*Moderate*	*Conservative*
U.K.[a]	53	28	19
U.S.A.[b]	49	26	25
Italy[c]	63	24	13
West Germany[d]	36	24	24
Sweden[e]	44	18	38
Australia[f]	51	14	32

[a] *Halsey and Trow* (1970: 403).
[b] *Ladd and Lipset* (1975a: 27).
[c] *Giglioli* (1976:25; *unpublished*); *recomputed data.*
[d] *Infratest* (1974:48); *recomputed data,* 16 *per cent claiming that they had no affiliation and uncertain.*
[e] *Gras* (1970:69); *recomputed data.*
[f] *Saha* (1976:82); *approximately* 3 *per cent reporting "none".*

In all cases, faculty members' "liberal" identification is appreciably greater than the general population. In the U.K., for instance, 46 per cent of the electorate consider themselves right of the political spectrum (Williams, Blackstone & Metcalf, 1974: 405-408).

Evidence from the Carnegie Commission Survey of more than 60,000 professors confirms that American academics tend to follow liberal politics. Nearly 49 per cent of the academics, as compared to 31 per cent of the American electorate, consider themselves to be left-of-the-center (Ladd & Lipset, 1975a: 27). A recently conducted Gallup Poll (March 26-29, 1974) reports 49 per cent of the American electorate consider themselves on the right of the political spectrum. Particularly when one compares the cumulative right-of-the-center political attitudes, the ratio is a staggering 2:1. In Italy, West Germany, and Sweden, the distribution is about the same.

A number of factors in the literature have been summoned to explain the liberal political outlook of the faculty. In general, two major indepedent factors—*external social conditions* and *internal academic variations*—have been noted.

External Social Conditions

Religious Background—Irreligious faculty tend to be liberal. Ladd and Lipset's picture of the American family life of Jewish, Catholic, and Protestant faculty members supports this conclusion (1975a: 156-158). For example 79 per cent of Jewish faculty who were "basically opposed to religion" supported the Presidential candidacy of Eugene McCarthy (Lipset & Ladd, 1971: 124). Giglioli found a similar situation among Italians. Leftist faculty (75 per cent) consider themselves "agnostic" (1976). In the British and Australian studies, conservative faculty belongs to the Anglican churches (Halsey & Trow, 1971; Saha, 1976).

This effect is strengthened if lack of religious commitment is transgenerational. Father's political orientation is also important. Forty-six per cent of Jewish faculty reported their fathers' politics as "liberal or left" and 46 per cent also had children active in the Civil Rights or Anti-War movements (Lipset & Ladd, 1971; see also Ladd & Lipset, 1975a, Ch. 6).

Age—Age stands as an important demographic discriminator. Younger faculty tends to have a liberal political leaning (Saha, 1976; Halsey & Trow, 1971; Infratest, 1974; Nakano, 1974b; Ladd & Lipset, 1975a). Williams, Blackstone and Metcalf (1974: 410) examine such a generalization in two separate studies in England—Halsey and Trow (1964) study and Interview study (1970). In both studies, support for Labour and Liberal Party is inversely related with age. When rank as an intervening factor was introduced, Halsey and Trow (1971: 438) noted political orientation by age was reduced. Senior Lecturers, even younger ones, were notably conservative. The same is true of Japan (Nakano, 1974b). German and American situations are shown in Table 2. Young faculty belongs to the Democratic and SPD parties.

Table 2

FACULTY VOTE BY AGE GROUP IN USA AND WEST GERMANY IN PER CENT

	U.S.A.[a]		*West Germany*[b]		
Age	*Democratic*	*Republican*	*SPD*	*FDP*	*CDU/CSU*
Under 35	71	29	54	23	16
35-49	60	40	30	26	28
50 or over	42	58	16	20	38

[a] *Ladd and Lipset* (1975a*:* 226).
[b] *Infratest* (1974: 21)*; note: only male professors.*

Lazarsfeld and Thielens' (1958) examination of the Social Science faculties in the aftermath of the McCarthy Era (1950's) has provided some added insights into the age variations and issue-orientations. They constructed a "Permissive Index" to locate faculty's interest "in new ideas themselves" and "tolerance toward people who hold unorthodox views". They noted that "on each level of permissiveness, older teachers are less apprehensive than younger ones" (Lazarsfeld & Thielens, 1958: 138). Twenty years later, Ladd and Lipset (1975a) have documented various issue-concerns of the American academy. They report that as age increases, the fear of unionization and collective bargaining decreases (Ladd & Lipset, 1975a: 252-253). Thus, the security of academic seniority may offset the general conservative tendency on at least some issues.

Socio-economic Background—Father's occupation *per se* has no relationship to the academics' politics; however, faculty with fathers employed in manual occupations tend to be left-of-the-center. The distribution of father's occupation (see Table 3) shows preponderantly that academics' father's occupation tend to be professional. However, in Sweden, the United States and, in particular England, more than a fifth of the academics' father's occupation have been classified to be manual. In Britian, researchers have concluded that their allegiance to the Labour Party is connected to manual occupational background (Butler & Stockes, 1969; Butler & Pinto-Duchinsky 1971; Halsey & Trow, 1971; Williams, Blackstone & Metcalf, 1974: 413).

Table 3

FATHER'S OCCUPATION[a] IN PER CENT

	Professional	*Other-Non-manual*	*Manual*
Sweden[b]	52	27	21
Japan[c]	67	19	14
U.S.A.[d]	51	25	24
West Germany[e]	55	35	10
England[f]	39	28	33

[a] *Reconstructed with the aid of Duncan's Socio-Economic Index Scale (see Reiss and others, 1961, pp. 265-275). Occupational categories were collapsed as devised by Williams, Blackstone and Metcalf* (1974:31).

[b] *Gras* (1970:65).

[c] *Nakano* (1974b: 50).

[d] *Lipset and Ladd* (1975a: 172).

[e] *Infratest* (1974: 52).

[f] *Williams, Blackstone and Metcalf* (1974: 31).

In the American and Italian data this generalization does not hold. Ladd and Lipset (1975a: 176) in analyzing the 1969 Carnegie Commission on Higher Education Survey, concluded that neither parental occupation nor education were related to political orientation. However, they modify somewhat the general statement. They find that there is "strong middle class bias" among the professoriate. They further report "only 24 per cent of the academics had fathers who were blue-collar workers although such occupations account for roughly three-fifths of the male workforce" (Ladd & Lipset, 1975a: 172-173). The variations are explained mostly on "career lines". They find that academics from high socio-economic status backgrounds, tend to be affiliated with high institutional status (Ladd & Lipset 1975a: 174) Giglioli's study (1976 unpublished) of Italian academics corroborates this. He found that although father's occupation was correlated with the academics' political outlook (98 per cent) "social class" was not a factor.

The relatively moderate orientation of Swedish faculty may be explained by the historical situation of the Social Democratic regime's successful enlistment of academics. Yet, it must also be noted that 35 per cent of fathers and 34·5 per cent of fathers-in-law of Swedish academics were owners of large enterprises or were professionals. Even in the "democratized" faculties (economics and social sciences) 33 per cent come from the upper class. Thus "social origin" rather than "professional cultural universe" was felt to weigh most heavily by one analyst (Gras: 1970) in determining Swedish moderation.

Nakano (1974a) in examining three separate universities in Japan, found close proximity of both father's and father's-in-law occupation vis-a-vis the professoriate. He reports that one-half of the fathers of Japanese academics originating in the "old middle class" finished high school. The political orientation of Japanese faculty is, however, more liberal than these social origins would lead one to suspect. Kim (1972) finds a similar situation in Korea, while Saha's (1976) study of Australia is more like the British example.

What predictive value has the socio-economic background provided for explaining the professoriate's political orientation? The social conditions in nations are largely influenced by the degree and the nature of the pluralistic orientation exhibited within higher education. In America, where educational entry by the college-age cohort is at its highest, education is meritocratic. As Boudon (1974: 195), in examining most of the Western industrial societies has concluded "... the increase in overall demand for education tends to make societies more meritocratic over time; the correlation between educational level and social expectations become higher". All of this suggests that, while there is some evidence of the influence of socio-economic background on academicians' politics, there is also considerable cultural variation. Faculty liberalism may be spurred by working-class family origins, but it may also appear in spite of aristocratic predominance. And, in at least one case, it may be moderated by background and public policy.

One line of further inquiry might lead into the relationship of higher education to national growth and development. Denison (1962), Ben-David (1966), and Boudon (1974) have explored the degree to which economic development is dependent on expanded, more meritocratic access to education. Academic politics may radicalize or moderate according to the progress of meritocracy in each national context[2].

Internal Academic Variations

Discipline—Social Sciences faculty are most liberal. Scores of studies validate this basic proposition. Consider the following comparative data:

Table 4

POLITICAL ORIENTATION OF THE SOCIAL SCIENTISTS
IN PER CENT

	Liberal	*Moderate*	*Conservative*
U.S.A. I[a]	64	16	20
U.S.A. II[b]	43	29	28
U.K.[c]	70	21	8
Italy[d]	62	31	7
Korea[e]	56	38	6
Sweden[f]	27	25	44

[a] *Ladd and Lipsèt* (1975*a*:60).
[b] *Lazarsfeld and Thielens* (1958:127)*; recomputed data.*
[c] *Halsey and Trow* (1971:430).
[d] *Giglioli* (1976*: 27, unpublished); recomputed data.*
[e] *Kim* (1972:18)*; mimeographed.*
[f] *Gras* (1970;71)*; recomputed data.*

Once the major disciplinary orientations vis-a-vis liberalism are examined, the liberal position of the social scientists is further understood.

Ladd and Lipset (1975a: 108), in their analysis of 1969 Carnegie data, provide a close examination of American social scientists. As they document, there exists a "modest" difference between the social sciences. Sociology, along with anthropology, is the most "liberal or left-field", whereas, "less consistently", political science, psychology, and economics are less liberal (Ladd & Lipset, 1975a: 114-124).

Juxtaposed to the findings is the analysis offered by Gras (1970) on the Swedish academics. Social scientists, he reports, are the most "active participants in government's reformism", instituted in the "politics of compromise" (Rostow, 1955) in the 1930's. These reformists show a disproportionate (44 per cent) conservative political orientation.

Institutional Status—As the quality of school increases, the proportion of liberal faculty increases. Ladd and Lipset's "Index of School Quality" involved ranking of institutions on the basis of three indices of "academic standing": (1) "SAT scores required for admission (selectivity)"; (2) "research expenditures adjusted for the number of students (research)";

and (3) "total institutional expenditure, also adjusted to a per-student basis (affluence)" (Ladd & Lipset, 1975a: 143). Their findings in both of the national studies confirm that as both the quality of school decreases, the proportion of regularly voting Democrats decreases (Ladd & Lipset, 1975c:2).

Lazarsfeld and Thielens (1958) found that the faculty of elite, private institutions voted Democratic preponderantly (76 per cent), as opposed to Catholic institutions (47 per cent). Moreover, the greater proportion of "permissive" (as discussed earlier) social scientists were at private schools (57 per cent) and very large public universities (55 per cent), than at small Catholic schools (3 per cent). The re-constructed data led them to conclude that high quality schools have a larger proportion of "permissive" social scientists (58 per cent) than low quality schools (22 per cent).

Several comparative studies within the British educational framework have concluded that the higher the institutional status, the more left-of-center is the orientation of faculities (Saha, 1976; Herman, 1975; Halsey & Trow, 1971).

In France, educators trained in elite institutions, Dogan (1960) reports, form an important source of political recruitment. He documents that 75 per cent of the French Legislators (Deputies) in the Third Republic received their education from elite institutions. This has led Dogan to observe that these universities are a "nursery of political men".

Academic Culture—Research orientation is related to a liberal political outlook. In describing academia two ideal-types have been part of the academic "way of life". The research culture is an expression of emphasis on creativity, fundamental thinking, and is primarily innovative. On the other hand, the teaching culture encourages "transmission of knowledge".

With the increasing differentiation in higher education since World War II, the function of teaching in the "Multiversity" has become more prominent. Particularly in professional-technical institutions, the educational task is seen as training qualified personnel to service the "Post-Industrial Society" (Bell, 1973). There has been a certain association of teaching emphasis with technical and applied concerns.

Both Halsey and Trow (1971: 259-261) and Williams, Blackstone and Metcalf (1974), in examining British academics, found that teaching-oriented faculities in Colleges of Advanced Technology (CAT), Colleges of Education, Colleges for Further Education, and in Polytechnics, support the Labour Party. They have tolerant attitudes toward students and also are more favourable towards expansion. These institutions' primary function is teaching. However, Williams, Blackstone and Metcalf (1974) added that party allegiance is not a discriminatory factor in explaining the "level of positiveness in attitudes toward students". The "sources of radicalism" in the teaching-oriented faculty has been reported by Nakano (1974b) in the Japanese academy. He finds two main sources of party support—Socialist and Communist and *not* Democratic Socialist. With the increasing age cohort, Nakano notes the level of support for teaching as a main function decreases.

Within the teaching culture, "pure" versus "applied" knowledge has also been viewed as an important dichotomy. Aron (1962; see also Schumpeter 1950:153-155) describes the corresponding roles of "scribes" and "experts". Particularly in the post-industrial society, this distinction underlies the sources of political orientation. Ben-Rafael (1976) illuminates this in re-focusing the Tel-Aviv University Study conducted by Shapira and Etzioni-Halevy. The overwhelming sentiment of the faculty (90 per cent) was that the teaching of "basic knowledge" as opposed to "vocational", is the "first function" of the university. Sixty-eight per cent consider the "creation of knowledge", rather than teaching, more important. And finally, 57 per cent insisted upon teaching "gifted and advanced students" rather than "general" ones. Parsons and Platt's (1968: 479-523) study uncovers a "preferred fusion" of American academics in their desire to spend "equal time" teaching undergraduate and graduate courses.

Research Culture—Several indices have been used to measure research activity: publications, membership in professional associations, attendance at national and international conferences, rates of professional mobility, membership in high-status universities, age, and disciplinary orientation.

The generalization—the more the publications, the greater is the leaning toward left-of-the-center among academics—has been documented by Saha (1976), Halsey and Trow (1971), Williams, Blackstone and Metcalf (1974). Lazarsfeld and Thielens (1958), and Ladd and Lipset (1975a). Saha (1976:86) in his Sydney University study notes, faculties with six or more articles, 51·4 per cent consider themselves to be left. He further documents only 35·6 per cent are oriented to the right. However, Williams, Blackstone and Metcalf[3] note that once "creativity" and "productivity" were "differentiated", no substantial relationship was found between productivity and party alignment in the British academy. However, they found a consistent high rate of publication among the liberal-oriented faculty (Williams, Blackstone & Metcalf, 1974:428).

Two separate studies on the British academics further highlight interesting observations. In a British Interview Survey[4], it was found that research publication in humanities (39 per cent) and applied science (45 per cent) is independent of a liberal orientation. Donnison (1972), in his survey findings, remarks that those who had published "original research" about "innovations in public policy": (1) kept busiest when Labour Party was in power; (2) did seminal work during Conservative administrations when public interest and funds for applied research on social policy was low: and (3) many belonged to the Fabian Society.

As to the indicator of the membership in professional associations and concomitant attendance at conferences, Herman (1975), in his Australian study, found that such an indicator is usually associated with a centrist position.

In two separate studies in the United States, Babchuk and Bates (1962) examined major universities offering a doctorate in the department of sociology, and Cartter (1965) examined the "top" 25 Economics departments.

Both discovered a close relationship between publications and membership in high-status departments. Cummings (1971) has noted that the elite faculty is highly mobile, even given the uniformity in Japanese Academia.

Ladd and Lipset (1975b:2) provide an important finding in their recently published survey. In the high-status institutions, about one out of two, as opposed to one out of ten in the low-tier institutions, have published. They further note that, although 4 per cent of their sample is "completely research-oriented", a disproportionate 75 per cent in American academia view themselves as inclined to teaching. Eighty per cent of the lowest-tier institutions said that they have "rarely or never published". Most importantly, they found that young academics are inclined to research. This finding points to "perhaps a significant secular shift" in American academia. This coupled with our earlier findings regarding the propensity of young academics to have a liberal orientation, may have prominent long-term effects in academia. This is not the case in Israel; the most research-oriented are the professoriate above 50, who hold clearly liberal positions. To the contrary, young, mostly "Israeli-born" faculty share a general centrist position with their students (Ben-Rafael, 1976: 246).

University Participation—On university matters academics tend to be a traditionalist. Two major internal university issue-orientations have been identified among the professoriate. These are: (1) traditional academic value-orientation, and (2) degree of involvement in university affairs.

In local university-related matters academics are comparatively traditionalist. Herman (1975), in the Australian study, notes that 31 per cent of the liberal professoriate either "strongly agree' or "agree" that "attendance at a college is a privilege, not a right". The West German (Infratest, 1974) study documents that as high as 67 per cent of faculty are not reform-oriented; 55 per cent view "reform" as interfering with the "primary function" of teaching. Further, they view that "constant reform within the university disorients students about their educational goals". Reservations against reform increase with age. Instructors in professional schools, especially in the Engineering and Comprehensive Technical Institute, *Gesamthoschule,* are "conservative". The survey concludes that, generally, all faculty hold traditional values on the issue of "lowering" educational standards.

Ben-Rafael (1976:72), commenting on the Carnegie Commission Survey, observes that:

> [T]he gap between Jewish and gentile faculty is smallest for items pertaining to changes in academic standards...... [particularly] successful, creative, and research-oriented faculty are more liberal or left on general political questions, but they are also heavily committed to the university and scholarship.

During the aftermath of student protests, a number of governments in Europe, and elsewhere, have embarked upon expanding higher education, particularly in instituting applied and technical colleges. In Britain, both

Halsey and Trow, and Williams, Blackstone and Metcalf, provide us with important insights into the changes affecting the traditional attitude of the faculty. Halsey and Trow record very large differences (mean 41·7 per cent) between the Left, "strongly supporting expansion", and the Right, "broadly opposing it". The degree of critical disagreement within the British academics becomes pertinent when one compares the average (41·7 per cent) with representative categories in the electorate. More interestingly, of the first six questions of the interview, which deal with growth, once the attitude toward growth is coupled with the idea that the "essential quality of British university life should be preserved", the conservationist view predominates negative 43 per cent) (Halsey & Trow, 1971: 439-446; recomputed data).

The Left in Britain generally support the equalization of conditions of the populace via expanding the educational framework, on the basis of meritocratic principles (Halsey & Trow, 1971: 262-263). Williams, Blackstone and Metcalf (1974: 432), in reviewing this position several years later, examine the extent of the former generalizations in view of the added factors—"the growth of cost-consciousness" and the rise of student numbers (since the Robbines Report).

The degree of involvement within the university's bureaucratic decisional activities in two separate institutions provide important findings. In the West German study (Infratest, 1974), the younger faculty held the view that they participated "too little", whereas full professors found that they were "too much" involved. In the Japanese study Nakano (1974b) found those faculty who viewed their departments as "autocratic", tend to be "radicalism-oriented", while those viewing their departments as "democratic" are in fact aligned with the Conservative Party. He further notes as radicalism increases, influence and power within the department, decreases, Shapira and Enoch (1973), in their study of Israeli academics, note the faculty who are highly involved with the university tend to be more scientifically productive.

The literature on student protest and the concomitant changes within the universities are extensive. For our purpose we will briefly highlight some of the salient findings, as they relate to the comparative academics and their view of student protests affecting internal academic changes. The more research-oriented, the greater was the disapproval of the student unrest. The attitude of *loco parentis* by the academics reflected their historical predisposition to maintain the critical examination as an essential source of learning. Perhaps it is only fitting that those academics who are committed to the creative "novationist" sources of knowledge were the ones opposed to change from any other source. They are the "gatekeepers" of academe (Ladd & Lipset, 1975a: 11-13).

National/International Participation—On national/international issues academics are liberal. Ladd and Lipset, in their current investigation of American universities, have reinforced Hofstadter's conclusion some 12 years ago, that the "political commitment of the majority of the intellecuual leadership in the United States has been to causes that might be variously described as liberal (in the American use of that word), progressive, or radical". They report: (1) the greater the "research-orientation", the more the involvement in the polity; (2) faculty members with Democratic Party affiliation are more involved; and (3) further, those academics who consider themselves "liberal" on issues pertaining to international matters are more "active". The greatest participators were found to be involved in the state and local politics (Ladd & Lipset, 1975d: 1; see also Lazarsfeld & Thielens, 1958: 261). However, examining the focal orientations toward polity, it is reported that the political attitude on such national-international matters as busing, military spending, and others, is "liberal", and not "radical". And the greatest differentiation, even more than the electorate, is within the disciplines. Disciplinary orientations emerge as dividing the academy.

The distinction between "cosmopolitan" and "local" offered by Merton (1966: Ch. 10) and elaborated by Gouldner (1967, 1968) seems to be relevant to a variety of societies. Lammers (1972), in analyzing faculty participation in policy-making changes in Leyden University (Netherlands), provides us with one such case study.

The demand for democratization of the university, coupled with the massive rise in the student population, produced major confrontations in 1969 between the General Leyden Student Association and the traditional university. Lammers reports that the more local the faculty orientation, the greater was the participation in the policy-making changes called forth by the student body. However, the most "active" participants were a combination of both locals and cosmopolitans. Age again appears to increase liberalism on internal issues, the old cosmopolitans ultimately being the biggest hindrance for the students' desire for immediate change.

Faculty members who were described by their deans as "quite research-minded", as contrasted with their own colleagues, were the most opposed to the university reform (Lammers, 1972).

Newer nations have often exhibited an international cosmopolitanism. Ben-Rafael notes that, in 1964, Israeli scholars received about 9 per cent of United States foreign research, and in 1966, 12-15 million dollars in research grants from foreign government agencies (Ben-Rafael, 1976: 250).

This international cosmopolitan outlook has been important to modernization, but particularly in the case of Japan it can be carried to uncomfortable extremes. Bellah (1972; see also Etō, 1965: 603), and others, have noted the vital role played by the intellectual in both Meiji and Taisho periods. At the same time, over emphasis of "foreign knowledge" has produced a massive inarticulateness in the "quality of theoretical receptivity", and, hence, "social parochialism". Japanese academics are virtually strangers in their own land. Naka's (1971) content analysis on Japanese Sociology suggests that it looks toward the West predominantly, particularly America. Seventy-five per cent of the books translated between 1960-1969 were American. The birth of modern Japanese universities evolved from the study of foreign language. Nagai (1964,1971) and Ito (1964) argue that academics for the most part are "diffusers" who advocate the international role of knowledge.

The crucial task of exogenous and endogenous intellectual development of the academics has been examined in a number of studies. Kim (1972, unpublished manuscript) reports that, irrespective of ideological disposition, Korean academics rank the task of modernization first, national unification second, creation of "new ideals" third, economic development fourth, educational refinement fifth, and finally elimination of "injustices and corruption". However, these academics are not prone to participate in "government policy" formulations, largely because most view the state as "ineffectual".

Latin American academics have a strong tradition of political awareness but are less actively involved in politics than might be expected. Their cosmopolitanism has varied considerably. Participation has perhaps been restrained by the *catedrato* system of dependence on senior, chair-holding professors (Liebmar, Walker & Glazer, 1972: 60; see also Germani, 1959). Cosmopolitans must also contend with the spectre of North American domination and the feeling of powerlessness it produces (Bonilla, 1968).

Both Bonilla (1968) and Cappeletti (1969), in their attitudinal inventories of intellectuals and university professors, emphasize two specific issues—"barriers to national unity" and "feelings toward Latin-American integration". They find that 85 per cent view the "lack of civic culture" in the masses as a deterrent to unity, followed by "influence of powerful international monopolies" (55 per cent). A disproportionate majority (87 per cent) "favor" and "favor with reservation" the question of Latin-American integration. However, their degree of commitment, in terms of "active participation," is indeed low. We find that even though 40 per cent of intellectuals rate their "political views as important", and 53 per cent discuss politics "with their acquaintances", only 11 per cent worked "actively in politics" in the "last six months".

Maldono-Denis (1964,1968), in his open-ended interviews with Caribbean intellectuals, found that the Cuban Revolution had divided the academic community. Most were still "men of the Left" but were divided between "Social Christian" and "Revolutionary" approaches to change (see also Marsal, 1968).

In India, academics seek "autonomy" from both State and local authorities. They participate little in politics and are often characterized as apathetic (Singh, 1972; see also Gaudino. 1965, and Bhaskaran, 1967).

Conclusion

The authoritative allocation of values, which has historically been a concern which binds academics together, forms the source of both opposition and integration. Academic authority is still, in many societies, closely tied to secular power. Either as servants of established regimes or nurterers of a new order to come, they have carried on the tradition of the Renaissance academicians, basing their authority not on religion or its usurper Science but on their ability to aid those who control, or will one day control, the State.

Yet, there are curious contradictions within the patterns of academic politics which suggest a more complicated locus of authority apart from the state. While age and rank bring increasing conservatism with faculty in general, it does not do so among the most productive faculty and the most prestigious institutions. Furthermore, while they maintain their liberal attitudes toward national and international issues, they display resistance toward any academic reform that might change or weaken scholarly values or increase access to higher education on any but a strict meritocratic basis.

This contrast of external liberalism and internal conservatism has been attributed to liberal contradiction (Mills, 1956, and Blauner, 1972). But a historical view of the university prompts us to seek a different explanation. Critical intellect embodies creativity and opposes the *status quo*. Those who take scholarship most seriously will therefore have to adopt a critical attitude to the world in general. This skepticism may be radical and revolutionary, but is more often liberal. Thus academics are frequently able to accommodate or actively cooperate with the existing State. But they make the basis of their authority—and academic order—the value of criticism itself and and not secular power. Iconoclasm becomes a sacred activity. This requires both the liberal/radical outlook on the outside world *and* the conservative internal posture toward any weakening of the faith.

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3. Williams, Blackstone, and Metcalf (1974) *The Academic Labour Market—Econonic and Social Aspects of a Profession London*: Elsevier); Halsey and Trow (1971 : 276-328 (The British Academics. Cambridge: Harvard University Press) points to six sources of research, as opposed to teaching, orientations: (1) "individuals" own teaching situations," (2) "age", (3) "rank" (4) "subject", (5) "present university", (6) "class origin". They further find that half of "young teachers of white-collar origin are mostly "interest in research".

4. The British Interview Survey was conducted by Williams, Blackstone and Metcalf (1974) *ibid.*, in March, 1970.

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Deliberative and Decision-Making Process in an Australian University

Y. RAGHAVIAH

I

The concept of lay participation in the governance of universities is typically a Western representative paradigm. It had gained wide acceptance and institutional sophistication during the heydays of reform and exuberance in the 18th and 19th century Enland. Indeed, the concept of lay participation in university governance has the peculiar aura and pride of uniqueness, so characteristic of English social and political adjustment history. The vigour of English social and cultural institutions is such that several of them have amazing potentialities to thrive on almost any soil and attain internalisation. Among the numerous institutions, procedures and practices which the English have introduced in their colonies, the concept of lay participation has remained one of the most useful. In India, the concept was so well received and structured into the social and political rights movement that Lord Curzon, the erudite Governor-General in the early 20th century, had to tone down and dilute the proposition by declaring the primacy of professional educator. Apart from serving the then colonial interests, Curzon's measures had the substantive value influence in preventing the campuses from being reduced into nests of political factionalism. We have mixed governing councils with substantially decisive roles given to professional educators. The Americans have employed the concept of lay participation with far greater success and, indeed lay supermacy in university governance is one of the dominant and influential propositions in their higher education managements. In different combinations and with culture-relevant conventions and procedures, a number of ex-colonies of Great Britain have assimilated the concept of lay participation. Australia is one other nation which has adopted a somewhat middle path with mixed compostion in the university governing council but with a lay chairman.

It is part of experience that most former colonies with heavy socio-cultural and political influences from the mother countries, tend to take the rather difficult approach of synthesis in designing their institutional structures. It seems that there is a genetic-native pull, a super-imposed colonial-imprint, and a contemporary 'referent' drag, which most non-cummunist Asiatic and African new nations are experiencing in their chiselling and carving operations. The genetic-native pull is almost inescapable, the colonial imprint is so mysteriously comforting and functional and the referent drag appears as attractive as it is perplexing. This predicament under conditions of compelling "compression effect" is tending to make the new nations indulge in large-scale restructuring exercises. The general tendency appears to be to rush towards the contemporary referent drag and return via the colonial imprint to work for the native needs, the last two being more consistent with the conditions obtaining in the ex-colonies In this perspective, it seems likely that the new nations may not go towards "Americano-centrism" with blinkers. As recent experience shows, they are most likely to structure their institutions and develop procedures with elements drawn from all the three. Apart from the three attractions, we have the fourth, the influences of socialist economic culture. The most thorny problem in several non-communist new nations appears to be to blend all the four elements and evolve reasonably stable and efficacious institutional structures and procedures. These influences are, doubtless, pervassive and tend to disturb the existing institutional fabric in many ex-colonies. The university systems in Australia and India, interestingly enough, reflects vividly the effective incorporation and institutionalisation of all the four elements outlined above.

In Australia and India, lay participation is an accepted proposition in university governance, but lay predominence is less welcome. While there is a lay chairman for the university council in Australia, a salaried full-time contractual incumbent, the Vice-Chancellor, is chairman of the syndicate in Indian university system. Professional politicians, civil servants, persons from medical and other organised professions, social workers, academics, and professional educational administrators come and go as Vice-Chancellors on tenure-based appointments in over hundred Indian universities. The Australian model is somewhat closer to the American with its two-tier governance pattern the Council and the Professorial Board. While there are experts who argue that the senate—the Indian university's mini-parliament is a mere rubber stamp and a gateway to politicisation of campuses and hence dispensable, it is still accepted to be one of the most useful shockabsorbing mechanisms which no troubled university could afford to lose. In the conditions of expropriative mass political actions, publicists in India find it expedient to structure suitable receptacles to absorb political fire-spitting in as many public institutions as possible. It is customary to give them different nomenclature as lay representation, participative management, consumer representation etc., and they are, partly, intended to absorb, and, possibly, silence the swarming dislodging elites. That way, the tripartite arrangement with academic council, senate and syndicate in Indian university system is useful enough a proposition. The laymen in Indian university system find themselves in all the three bodies, although their main fortress is the senate. The Australian system, as in the United States (the Trusteeship Boards) has only one body for laymen—the university council. There are neither private universities nor such massive private funding in Australia and India as in the United States. But, universities in Australia and the United States of America are highly competing enterprises in the educational markets. In India, under conditions of low literacy, dearth of skilled manpower, the declared "open door" policies and mass education, universities are least subjected to market forceses in the way it happens in Australia and the United States. Laymen, professional educators and the youth in India tend to take university education as a market-free civic-type of primary social endeavour. Thus, university education is as much a first charge on the governmental revenues as defence, police or municipal services. While there are live inter-university competitions in Australia, universities in India thrive merrily as Islands of their own. Into these textures and different formations are woven a variety of influences and experiences of both native kind and exotic cultures of relevance.

In the same way, the academic ethos of universitymen has come to take certain identifiable directions under the pressure of influence from dominant referent cultures. The admittance of lay participants into the decision-making centres of universities has been such a painful development over the past three centuries that the academics, even today, grudgingly accept it. The prejudices, propensities and predilections of academics against lay interventions are too notorious to need any elaboration. In some degree or other, academics hesitate to accept laymen as co-decision makers. This general academic disposition towards laymen, however, has degree of retraction-attraction variations in different university systems. Many academics may not wish to be governed by laymen or even accept them as co-decision makers. But, some may take a neutral-indifferent stand and some others may willingly concede to them the role restricted to the "externa".

The Australian experience is variant and legitimately so. What then are the attitudes and feelings of university academics. in general, and academic councillors in particular, towards lay members in Australia? What are their experiences of lay participation in university governing councils? An enquiry into these questions provides some interesting insights into the nature of university governance in Australia.

This study was made in the University of New England through a series of in-depth interviews and discussions with a number of academic and lay members of the University Council, both present and past, and some members of teaching staff*. These included the Chairman, Vice-Chairman and a few members o the Professorial Board, Deans and the Registrar. The objective of the study was to elicit opinions and attitudes of academics towards laymen. A second set of interviews was conducted with important and experienced lay members of the university council to obtain information about their own experiences in the university governance.

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* Study made by the author when he visited the University of New England, Armidale, Australia under the kellogg assistance and travel grant from the Commonwealth Foundation, London and the Osmania University, 1978.

The university of New England is, primarily, a rural university with substantial interest in rural-based sciences and it is also situated in the rural town of Armidale. The University is one among six universities in the state of New South Wales and it is governed according to the enabling state legislation.

The governing body of the university of New England is known as the Council with heterogeneous membership. The Council consists of a Chancellor, a Deputy Chancellor, a Pro-Vice-Chancellor, the Vice-Chancellor and members. The Chancellor, a layman, is the Chairman of the Council. The Vice-Chancellor is merely one of the members of the Council. In the absence of the Chancellor, the Deputy Chancellor presides over the Council's meetings. The Vice-Chancellor is appointed by the Council itself and continues in office during its pleasure. The Council is composed of representatives from the parliament, government, the public and those nominated and elected by the Council, the teachers including the chairman of the Professorial Board and students. The lay members come from a variety of occupational back-grounds. At the time of the study, there were twenty eight members in the Council, of which eleven were off-campus members. The Chairman of the Finance Committee is always an experienced lay member. One of the members of the Council was a Minister in the Federal Government. Generally, the Council members have interesting political affiliations: a bulk of teacher members are Labourites and the lay-members have Conservative and Country party affiliations and sympathies. As we know, university teachers and public servants are entitled to be regular members of political parties in Australia.

The Council, though a supreme governing body, with a part-time lay chairman, concentrates on broad policy matters, financial allocations, appointments and general superintendence. Statutorily, it does enjoy considerable authority which includes "Provision of courses of study, the awarding of degrees, the appointment and termination of employment of all staff, and the investment of funds". But, most of its powers are delegated to its own committees, to the Vice-Chancellor and his committees and to other officers of the university. The Council is, often, talked about as the rubber stamp of the Vice-Chancellor (usually a distinguished senior professor) and the Professorial Board. For one thing, the Council itself does not initiate proposals and programmes. It is almost always an approving and disapproving body. Sometimes, it refers back the proposals to the appropriate bodies and committees for reconsideration. The Professorial Board which is comparable to the Academic Council in the Indian universities, is the most powerful and authoritative academic organ of the university. The general experience is that the University Council does not fancy entering into confrontations with this body.

The Council either approves the recommendations or refers them back to the Professorial Board for reconsideration. The most powerful committee of the Council is the one dealing with finances. But, the Finance Committee itself is considered a rubber stamp of the Budget Advisory Committee which is the Vice-Chancellor's Committee. This Committee reports to the Finance Committee and the Council. The Finance Committee and the Council usually approve its recommendations, although issues are discussed and questions raised. In practice, again, the Vice-Chancellor as the chief executive of the university, gets most of his proposals approved which is somewhat similar to the experience in many Indian university syndicates. The academics discuss most of their proposals either in the Professorial Board or appropriate committees and reach the Council with settled matters from the academic front. As stated, most matters of general administration and management go on uninterruptedly, coming as they do within the ambit of executive discretions of the Vice-Chancellor and the Registrar. In this perspective, it may be worthwhile to examine as to what kind of ideas do key academics in the university entertain about lay participation. In other words, how do the academics perceive the roles and performances of laymembers in the university Council? It is possible to identify three broad categories of the academics' evaluation of the participation of lay members in the meetings of the university Council and their behavioral orientations. The academics evaluate the performances of lay-members from the standpoint of: (1) competence and commitment; (2) preferences and predilections; and (3) substantive and constructive contributions.

1. A generalised view of the academics about the competence and commitment of laymen, either in the deliberative processes or their interest and involvement in university affairs, appears to be that they lack competence to deal with complex university problems. It was felt that most laymembers show indifference to issues, discussions and decisions in the Council. The feeling that the university was unable to attract able and experienced laymen into the governing council was also widely expressed. One of the reasons for this situation was stated to be the rural character of the university and its location in the countryside. Some felt that the reason for decline in the interests and involvements of lay-members was due to increasing State control and regulations of university affairs. Then, general experience shows that around half of the lay-members tend to be nonparticipants and make no worthwhile contributions to the deliberations in the Council. A variant of this position was that the legislators and government representatives show, relatively, more indifference to university affairs and had lesser interest in the Council deliberations and they were also found to be less regular in attending the meetings.

2. Interestingly, lay-members were found to vote, mostly, the way the Vice-Chancellor wanted. They also, generally, support the Vice-Chancellor as against the academic members in the Council's deliberations. But most senior academics do not seem to consider this lay preference as a motivated

and pre-determined disposition. They also do not believe that the laymembers support the Vice-Chancellor to obtain personal and group benefits or privileges. Several senior academics believe that laymen support the Vice-Chancellor because he is an authority figure and for the sheer pleasure of being on the side of authority. Some younger academics especially those active in the university teacher's movement and those with pronounced Labour Party inclinations, tend to take somewhat a different view. The laymembers do get some indirect social advantages by befriending the Vice-Chancellor. For instance, more invitations to functions, dinners and drinks parties from the Vice-Chancellor may yield extra social prestige, dignity and status to laymen. This may even, indirectly, bring business and other pecuniary benefits to some of them. Sometimes, some laymembers do come out openly to serve their own interests and force certain decisions, especially in relation to contracts. A decision may be taken to the effect that a particular contract be given to a local business firm instead of a better firm based at Sydney*. Then, lay support becomes critical in cases where there is clear difference of opinion between the Vice-Chancellor and the academic members. In such situations the burden of clarifying, substantiating and defending rests entirely upon the academics. As things stand, failure in this regard would invariably mean that the lay members vote for the Vice-Chancellor. Also, they were found to be favourably inclined toward proposals relating to student welfare.

The laymembers, in general, were not found to be obstructive and most of them appeared to make up their minds only in the light of evidence made available to them in the Council. In other words, their dispositions were issue-specific, situation-specific and based on merits of the case. Yet a few were found to be unreasonably stubborn and vociforous in the deliberations. The academics also felt that the recent trend of the Governor's nominees takes care to draw them closer. It is felt that this kind of rapport is essential to boost government allocations and attract students.

Here, it is useful, to bring out more vividly the academician's image of the layman, to record some of their observations:

(i) "about fifty per cent of them have nothing positive to contribute";
(ii) "one layman did not say anything in six years of my experience";
(iii) "there is no use of parliamentary members";
(iv) "the M.L.As and the M.L.Cs are usually those who are interested in politics and not in university affairs";
(v) "on issues involving radical measures, I could guess who is going to say 'yes' and who 'no'";
(vi) "the laymen will vote the way Vice-Chancellor wants them to do";
(vii) "wrong people are making decisions";

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*In cross-checking interviews, some lay members emphatically stated that it is the moral obligation of the university to support the town and promote its prosperity. This would, in turn, enable the town to help the gown.

(viii) "most important decisions are taken in the Council when the academics are out in January"; and
(ix) "the professoriate force the laymen into silence, indeed, intimidate them to silence".

The Council, being drawn from prominent members of the party in power, is fraught with serious long range adverse repercussions to the university. Experience shows that the tendency of the politicians and Government nominees was to toe the line of establishment. Finally, several academics felt that on certain issues, it was not difficult to perceive ideological groupings in the Council. The configurations may vary on specific issues but the laymen were, generally, with Conservative and Country party leanings, and the academics tended to show Labour Party affinities.

3. The most substantial contribution of laymen comes from their particular specialities. A layman brings to bear his expertise and experience on related matters of the university. The solicitor laymember advises the university and its officers on legal and procedural matters. Likewise, the grazier councillor's help in the proper management of university's sheep and cattle estates or the business-laymember's assistance on matters of resource mobilistion and in the promotion of good relations between the Town and the Gown. The laymembers also play some useful public relations role to enhance the prestige of the university in the community. For regional-rural type of a university, it becomes important that the local grazier magnates, who have powerful political connections, have friendly feelings toward the university. This is achieved by the lay councillors in many different ways of the university. The academics' dispositions and behaviour orientations provide some interesting insights into the very dynamics of decision-making in the university governing council. In a very limited way, it permits some comparisons with Indian university academic orientations. But, what are the attitudes and approaches of laymembers toward the academics and the university administration? An overall assessment of teacher and non-teacher interactions in the deliberations and decision-making, as of possible comparisons, would be meaningful only in the light of the attitudes and approaches of laymembers.

II

The laymembers of the university council come from different occupational and interest backgrounds. The council gets public representatives from different interest groups, businessmen, agriculturists and graziers, solicitors, politicians, legislators, industrial and banking interests. Most lay councillors are wholly pre-occupied with their primary-personal avocations and experience considerable difficulty in finding time to attend the meetings of the Council. Except in rare cases, most laymembers find their responsibilities in the university as a matter of social obligation, and their nomination or election as a recognition of their social importance. In general, a laymember has no direct personal benefits to expect from the university. Much of their involvement is motivated by self-actualisation yearnings of pride, prestige and social recognition. This is understandable since most of them enjoy comfortable economic and financial positions. How do laymen look at the university? What are their expectations from the academics and the university? How do they define their roles in the university decision-making? And, what are their frustrations in relation to the functioning of the university and its Council? Answers to these and other questions might yield useful insights into the thinking of laymen. The attitudes and opinions of laymen may be broadly categorised into three viz., on the role of the academics, the role of the Vice-Chancellor and self-definition of roles.

(i) The first and one of the most interesting impressions of laymembers has been that professors dominate most discussions in the Council. The academics raise many controversies and querrels. Some of them feel that it is a terrible test of patience for the Chairman (a layman himself) to settle issues. Secondly, it was stated that one of the important reasons for the low attendance of laymen was due to academic domination in the Council. Thirdly, laymen tend to think that academics talk only theory and from books and that they could play limited role in solving the practical problems of the community. One laymember remarked that the farmers know a lot more about farming than trained agricultural graduates. Fourthly, laymembers tend to think that there is considerable amount of anti-academic feeling in the community. The general public seem to view the academics as radicals and leftists. Finally, they tend to believe that the academics do not appreciate variant opinion in the Council's deliberations. It was stated that they resort to block voting and, often, gang up on most issues.

(ii) In regard to the role of the Vice-Chancellor in the Council meetings, laymembers believe that he reports only as to what is happening in the university. He also scrupulously avoids asking for the opinions of the members and that as a matter of strategy. The general tendency of the Vice-Chancellor is to cut short everything, complete the work quickly and disband the meeting (by exhausting the agenda). Persistent questioning makes him mutter, intermittantly, that we are "wasting time". It is said that despite ganged up academics and indifferent authorities, laymembers do attend the Council meetings only to go back disappointed. The laymembers also feel frustrated at the way Council meetings are conducted. They find the way agenda is circulated, lack of opportunity to raise questions at the end of the meeting and lack of attention to the issues raised by the members highly frustrating. The Vice-Chancellor and the Registrar tend to show less interest in what the laymen would like the university to do. Since there is growing inattention among the authorities, some conscientious laymembers choose to correspond with lower officers in the university to ensure minimum compliance.

(iii) The laymembers have some generalised notions about what they ought to be doing. They tend to believe that it is the responsibility of the academics and the Vice-Chancellor to guide the lay councillors. Academic initative is important to prevent serious mistakes which might be committed by uniformed outsiders. The layman's job is to assess the merits of the proposals initiated by the academics and the Vice-Chancellor. Secondly, they have a balancing role to play when there is academic infighting. These infights, paradoxical it may seem, make the layman more objective in as much as he could view the issues dispassionately and with the detachment of an "Outsider", Thirdly, the laymembers' best contribution is "ordinary, plain commonsense". Finally, even though the tendency of the academics is to monopolise the time in the Council meetings, laymembers take active, interest, especially on matters of finance and planning.

The attitudes and opinions of the academic group and the lay members toward one another reveal some interesting aspects of the dynamics of deliberative process in the university governing council. The academics tend to believe that the lay councillors lack competence, most of them in different, a few are non-participants and some irregular in attendance. The general tendency of laymembers is to vote with the Vice-Chancellor and they appear to be suspicious and even frightened of the academics. In the light of the preceeding discussion, it is clear that the academics tend to suffer from split morality. They would want the services of laymembers in resource gathering, in mobilising additional government grants, in boosting the image of the university in order to attract more students and also in supply of expertise and experience. But, participation in the decision-making relating to the management of university affairs appear to be an unwelcome proposition. In effect, the academic expects the 'outsiders' to help the university from outside and, naturally, remain outside only. A related disposition of the academics appear to be one of contempt and derision toward layman. The sort of negative images persisting among the academics indicates that they are yet not reconciled to the fact of the "Arrival of the masses." They are neither willing to concede the role of enlightened advice and detached overseeing to the layman. As is well-known, the presence of laymen in the decision-making centres has many decided advantages and one such is restraining possible State encroachments on university autonomy. It seems that most universities exhibit that much public responsibility as is induced by laymembers and other community representatives. The observations of laymembers of the council about their frustrations in relation to university affairs reveal that things are likely to be worse without lay participation. Independent inquiries show that laymen specially the senior ones, constitute a great asset and the university of New England has realised many tangible benefits apart from those other imperceptable and silent services.

It may be pertinent to observe here that the general academic dispositions toward lay membership in the governing councils in Australia and India have interesting similarities. While generalisation is difficult, experience shows that the Indian academic tends to suffer from identical split morality. They would accept lay participation but as support adjuncts to academic decision-making. Critical superintendence and searching, questions are quickly branded as lay impetuosity and ignorance. The feeling that a lay representative is an unaccomplished, ignorant ordinary man still seems to persist among the academics. However, it is commonplace to find several academic senators and syndics confess the valuable lay contributions to the deliberations and decisions. From the standpoint of lay thinking, one could also find interesting similarities between Australia and India. Many lay-representatives feel as much frustrated in the way the universities are functioning as their Australian counterparts. There are quite a few who express helplessness at the academic ganging up in the decision-making bodies. The point that deserves attention is that the future of university development depends, to a large extent, on the constructive lay participation. And the burden of drawing the lay functionaries into constructive action rests very much on the academics.

Journal of Higher Education
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University Teaching and Curricula

Materials Science Education

C.N.R. RAO

Materials science* has emerged to become one of the most important, interdisciplinary subjects of study in recent years. The subject owes its increasing relevance to man's growing need for newer and better materials essential to meet his sophisticated demands. As man is depleting natural resources, equally good or even better substitute materials are becoming necessary. Scientists have therefore to produce tailor-made materials of desired properties to suit specific needs. Materials of interest to materials scientists generally cover a wide spectrum, from metallic systems to organic solids. Materials science forms the interface between basic science (physics and chemistry) and technology (dealing with the production and exploitation) of materials. It is, therefore, necessary for a student of materials science not only to know basic physical sciences and structure-property relations of materials, but also the nature of applications of various materials. Materials science is being taught as a subject or as a discipline in many countries and we have only made a beginning in this direction in this country. In this article, we shall briefly examine how materials science can best be taught in colleges and universities in our country.

Existing Models

In advanced countries like USA or UK there are many universities which have departments devoted to materials science. In some universities, there are departments of materials science and metallurgy (or materials science and engineering) while in some others materials science is an interdepartmental programme cooperatively offered by faculty members in different departments. Some universities have Materials Research Laboratories offering common centralised facilities for teaching and research. Some universities offer undergraduate training with specialization in materials science (in combination with metallurgy in some instances). A greater number of universities, however, offer materials science specialization at the post-graduate level.

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* The term 'materials science' has been used to mean "materials science and engineering."

In this country, materials science is slowly getting to be recognised as an important part of engineering instruction. The first efforts in materials science education were made at the Indian Institute of Technology, Kanpur. Materials science is a compulsory subject for all students of engineering in IIT, Kanpur. This institute also has an interdisciplinary post-graduate programme in materials science leading to M.Tech and Ph. D degrees. Students with a basic engineering degree or M.Sc (Physical Sciences) degree are admitted to the programme. The programme offers core and advanced courses in materials science; research is carried out by students with faculty members in different engineering and science departments. IIT, Kanpur, has the Advanced Centre for Materials Science which includes a laboratory with many of the facilities required for the preparation and characterization of materials.

Indian Institute of Science, Bangalore, offers an interdisciplinary programme in materials science leading to M.Sc or Ph. D degrees. Students with a basic engineering degree or a M.Sc (Physical Sciences) degree are generally admitted to the programme. External registration for personnel in research and development establishments and industries is also granted on a selective basis. B.E. students of the Institute take a basic materials science course offered by the programme besides specialised courses on materials in their respective departments. A variety of post-graduate courses on materials are also offered by different departments for M.E. and Ph.D. students. The Institute has recently established a Materials Research Laboratory with good facilities for materials characterization and solid state electronics.

Materials science programmes have been initiated at IIT, Bombay, and IIT, Kharagupur. IIT, Madras, has a small centre for materials science while IIT, Delhi has a school coordinating institutional research projects. Banaras Hindu University has recently initiated a school of materials science.

Nature of Materials Science Courses

Materials science is not metallurgy, neither it is solid state physics or chemistry; it is certainly not solid state electronics or strength of materials. Materials science covers a wide variety of interests which include ceramics, semiconductors, superconductors, dielectric and optical materials, magnetic materials, composites, polymers, glasses, biomaterials and so on. Methods of making materials by a variety of processes, purification of materials and their characterization as well as crystal growth form integral parts of materials science. Subjects like surface science, materials testing, elasticity, plasticity and continuum mechanics are all of great importance to a materials scientist. It is because of this tremendous scope that involvement of all brands of scientists (physicists and chemists particularly), metallurgists and engineers is essential for the success of a materials science programme. A materials science programme will be rich and versatile if experts in all these disciplines participate; it will be that much poorer if any of the components is missing.

It is most important to ensure that students of materials science get a proper overview of the wide spectrum of materials (their structure, properties and applications) and also a basic understanding of the scientific principles governing the properties. Devices normally do not come within the purview of materials scientists although it would be useful to know the nature of materials requirements of different devices.

It is my view that every undergraduate engineering student must have a broad-based materials science course (alongwith a laboratory course) besides more specialized courses on specific aspects of materials related to the area of specialization. It is most desirable that physical science students both at B.Sc and M.Sc levels are able to take such core courses in materials science. It is also my view that there is no need for specialization in materials science at undergraduate level in view of the need for a sound background of basic sciences before taking up a proper study of materials science. It is best that materials science specialization is provided at post-graduate level. At this level, it is important that every materials scientist learns some essential aspects of materials technology as well. Since materials science is an experimental science, a project-oriented laboratory course should form an essential part of such a programme.

A Basic Undergraduate Course

A good core course in materials science can be planned if we can have about 45 lectures per term (3 lectures per week) for the purpose. A laboratory period of 3 hours per week (for 15 weeks) should suffice for the laboratory course. The following topics could be covered in the lecture course: crystal chemistry, phase transitions, electronic materials, magnetic materials, dielectric and optical materials, mechanical properties, brief discussion of some chosen materials.

Post-graduate Courses in Materials Science

A core course on materials science and another on materials technology could be offered as compulsory courses to all post-graduate students taking up materials science. The contents of these two courses are shown below. These two courses would also be of interest to other post-graduate students of science and engineering

1. Basic post-graduate Course in Materials Science (one term, 45 lectures)

Crystal Chemistry : A Brief Review

Crystal systems, point and space groups, Amorphous solids, Determination of crystal structure; X-ray, electron and neutron diffraction, Radial distribution functions and structures of glasses and polymers, Electron microscopy.

Reactions in Solids

Stabilities of solid oxides, carbides and nitrides. Solid state decompositions, Kinetics.

Phase Transitions in Solids

Thermodynamic relations for first & higher order transitions. Hysteresis, cooperative transitions, universal features, Martensitic transitions, Spinodal decompositions, Eutectoid decompositions, Soft modes, Pressure induced transitions.

Defects in Solids

Point defects in metals and ionic materials, Superionic conductors, Dislocations, Grain boundaries, APB etc. Study of defects by direct examination, Optical and electron microscopy, Field ion microscopy, Lattice imaging.

Mechanical Properties of Materials

Dislocations and strength of solids, Dislocation interactions, Strengthening mechanisms, Deformation (elastic and anelastic), Ultra high strength materials, Hardness and effect of heat treatment, Fatigue and fracture, stress corrosion, electro-chemical corrosion, Mechanical properties of glasses and polymers, viscoelastic behaviour of solids.

Science of Surfaces

Free energy, surface excess quantities, absorption and adsorption, catalysis and gas reactions on solid surfaces, surface characterization, surface area measurement, surface treatment.

Optical and Dielectric Materials

Polarization and Dielectric constants, Debye laws, Frequency dependence of dielectric constant and loss tangent, quality factor and application of dielectric materials, piezo electricity, Ferroelectricity, piezo optic and optoelectronic properties, Lasers and Laser materials, Optical communication.

Electronic and Magnetic Materials

Electrons in solids (band theory), semiconductors, preparation of electronic grade materials, types of magnetic order, soft and hard magnets, amorphous magnetism, super-conducting materials.

Thermal Properties of Solids

Thermal capacity and thermal conductivity, Thermal expansion, Insulating materials.

Crystal Growth

A brief review of various techniques of crystal growth.

Special Materials

Amorphous materials, molecular sieves, zeolites, photositalls, pyrocerams, photochromic glasses, cermets, organometallics, thermoplastics, gels, emulsions, dielectric coatings, transducer materials etc.

Basic Post-graduate Course in Materials Technology (one term, 45 lectures)

Preparative Technology

(a) Melting and casting Techniques, VAR, VIM, ESR, EBM, Laser beam melting

(b) Single crystal preparation from melts: various techniques

(c) Zone melting and refining

(d) Preparation of composites
Particulate dispersion technique
Precipitation technique
FRP composites
Unidirectional growth in alloys
Whiskers

(e) Preparation of special fibres
Glass fibres (for FRP, Opt. communication, cladding technique)
Refractory fibres
Carbon fibres

(f) Fine powders for composites and powder metallurgy mechanical methods attrition, spraying etc. Freeze drying solution evaporation techniques

(g) Preparation glasses amorphous films and pyrocerams
Normal melting and quenching
Annealing and divitrification
Fast quenching for met-glasses
Thin film techniques
— evaporation
— flash evaporation
— electron beam evaporation

Process Technology

- (a) Sintering and Heat treatment of materials
  metallic and non-metallic materials
  crystalline and glassy materials
  composites and glass bounded materials
- (b) Thermo-mechanical treatment
- (c) Forging
- (d) Extension and deep drawing
- (e) Sheet metal forming and rolling
- (f) Super plastic forming
- (g) High energy rate forming
- (h) Special techniques
  - (i) electro-forming and electrochemical forming
  - (ii) electro discharge machining
  - (iii) ultrasonic methods
  - (iv) hydrocutting

Testing and Characterization of Materials

- (a) Chemical characterization
  - — brief survey of chemical methods
  - — flame photometry, mass spectrometry
  - — electro-chemical techniques
  - — analytical spectroscopy
- (b) physical characterization
  - — X-ray diffraction and microscopy
  - — Optical microscopy
  - — Imaging techniques
- (c) Mechanical testing, strength, hardness, ductility, fracture, toughness, creep and fatigue resistance, wear resistance
- (d) Special methods for testing composites and environmental testing.

Effect of Environment on Materials

- (a) Effect of environment on properties of materials, prevention and cure of materials deterioration.
- (b) Corrosion, Chemical and stress; novel methods of corrosion prevention.
- (c) Biological attack on materials: metals, glasses, plastics and composites.

Special Materials in Modern Technology

- (a) Semi-conducting materials for electronic and photovoltic industry (both crystalline and amorphous)

(b) Cryogenic materials
(c) Ultra high strength materials
(d) Furnace materials
    — heating elements
    — nozzle materials
    — insulation materials
(e) Lubricating materials
    — graphite in alloys
    — liquid and gaseous lubricants
    — antifriction materials
(f) Composites: fibre, particulate and sheet composites
(g) Glasses: optical, laser and metallic glasses
(h) Magnetic tape and videotape materials
(i) Engineering materials
(j) Materials in tribology
(k) Aerospace materials

Besides the two core courses, several courses dealing with a variety of special materials and topics could be offered. Some of the special topics could be on phase transitions, amorphous materials, energy materials, ceramic technology, materials testing, environmental effects on materials and so on.

A laboratory course on the preparation and characterization of materials could be planned in such a manner that it is project-oriented. Students would be expected to prepare a specific material and characterize it by employing a variety of techniques; properties of interest could also be measured after the material is characterised. Such a laboratory course would give the necessary training in carrying out research at a later stage. Opportunities to use centralized facilities for materials research available in the institution like X-ray diffractometer, electron microscopes and so on should be provided to students in the laboratory course.

It is most important that at the end of the postgraduate programme, students are able to appreciate strategies for making materials for specific needs. They should know how to apply structure-property relations in real situations. It is my belief that with a good package of courses, laboratory instruction as well as a research project (at a Masters' degree level), it will be possible to impart adequate training in materials science. It would also be desirable to involve scientists and engineers in industry in such a programme by arranging invited lectures on special materials and on problems in industry related to materials. Another important interaction of universities with industry would be to offer continuing education programmes in materials science to personnel in industry.

Materials Research

There has been considerable research activity in materials science and technology in the country in various educational institutions and Research and Development establishments. However, there has not been sufficient coordination of these efforts. Major break-throughs in materials research will only be possible if crucial areas are identified and supported with critical inputs. Loose-jointed research efforts in various institutions would not result in any worthwhile results. It is essential to recognize centres of excellence in chosen areas of materials science and make the centres responsible for Research and Development efforts in those areas. Research students trained in such centres will undoubtedly be able to make significant contributions of value to both science and technology. It is my hope that we shall not lag too far behind in materials research in the country, but there is every fear of being left out of the race unless serious attention is paid immediately to the development of this important field.

In order to provide a forum for materials research activities in the country, the Indian Academy of Sciences, Bangalore, has initiated a journal entitled "Bulletin of Materials Science" in collaboration with the Indian National Science Academy, New Delhi. Within a short span of one year, the journal has proved to be a useful and effective of medium for publication of research and development efforts in the country.

Educational Modules

Since materials science deals with a diverse variety of techniques, materials and applications, it often becomes difficult to teach the subject. No single text book would meet the needs of even core courses in materials science and technology of the kind described earlier. Furthermore, contents of such courses vary depending on the teacher, nature and composition of the class, student interest and so on. In view of this, a journal devoted to educational modules for materials science and engineering has been started in the USA by Professors Rustum Roy and Charles Wert. This journal which contains a large variety of instructional units ranging from fundamentals to new developments in advanced materials science and technology will undoubtedly provide most useful resource material which can be permuted and combined for each particular learning audience. The journal is published by the Materials Research Laboratory of the Pennsylvania State University of which Professor Rustum Roy is the Director. The journal is kept inexpensive in order to make it available to a wide audience. A group has been formed in India to provide contributions to this journal.

Concluding Remarks

It is high time that teaching and research in materials science get the due encouragement and support they deserve. While planning and organizing materials science and engineering programmes in educational institutions, cooperation of scientists and engineers of various interests should be ensured; no one group should dominate materials science. It would be pertinent to end this article by giving definitions of materials and materials science and engineering in order to remind ourselves of the nature of the subject we are dealing with.

According to a report by a committee of the US National Academy of Sciences, "MATERIALS are substances having properties which make them useful in machines, structures, devices and products" and "MATERIALS SCIENCE AND ENGINEERING" is concerned with the generation and application of knowledge relating the composition, structure and problems of materials to their properties and uses".

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Teaching of Statistics to Students of Economics

A. RUDRA

It is by now widely accepted that some courses in statistics should necessarily feature in the syllabi in economics at the graduate as well as the postgraduate levels. In actual practice too, it is by now quite well established to accord this importance to the teaching of statistics to students of economics in most of the universities in the country. The University Grants Commission panel on Economics recently recommended that the same importance be attached to statistics in economics carricula; similar opinion was voiced in the different workshops that were organised by the University Grants Commission on the teaching of economics (1) It may not be wrong to say that this is one matter on which there is an almost universal consensus. The ground on which such a consensus has been arrived at is presumably the recognition that applied economics involves the drawing of inferences from data. As such knowledge of statistics is regarded as helpful if not indispensable for both learning as well as conducting research in the field of applied economics.

There is of course no mistake in the two basic points in the understanding of what is mentioned above. That applied economics requires the analysis of empirical evidence; and that statistical methods consist of scientific tools for the analysis of empirical evidence are two points which are no doubt correct. But an important matter that has hardly received attention from any quarter is the extent to which the particular methods of statistics are suited to the particular nature of data obtaining in economics and the particular problems of inference drawing which the subject of economics pose. Given the way statistics is taught to students of economics and the way they are used by research workers in applied economics one would think that the statistical methods as obtainable in text books of statistics are of universal applicability. As a matter of fact one may be forgiven if one should infer from the use of statistics in research papers in applied economics that the very small part of statistical theory which deals with linear regression, is by itself capable of taking care of all problems of inference that might occur in economics.

It is our argument in this paper that this widespread belief in the omnipotence of text book statistical methods is without any foundation. In particular, it is quite inappropriate for dealing with economic data. That is because of the particular nature of observations in economics and the very different nature of observations in certain other fields of science.

It may be recalled that prior to Galton and Pearson, that is during the infancy of the subject, the data basis of the theory of statistics related to human populations in their demographic as well as civic aspects, which incidentally provides the etymological root to the word statistics along with the word state-craft.

Yet another root of modern statistical theory may be found in the errors in observations made by astronomers and other natural scientists who gathered huge volumes of observations.

It is also worthwhile to trace briefly the history of probability. As is well known this latter discipline had its origin around the roulette table. The birth mark of gambling is still so pronounced in the literature of probability that even now every text book of probability begins with examples of games with the die or the pack of playing cards. As one goes deeper into the subject of probability one encounters examples taken from certain natural sciences like molecular physics, genetics, etc. But to anticipate our later argument it may be mentioned here and now that in no text book of probability does one encounter any examples from economics.

Economics thus has not been in any way related to either probability or to statistics during their formative periods. As a result the peculiar nature of observations occurring in economics or the characteristic properties of uncertainty as affecting economic phenomena have not received any attention in the theories of statistics and probability. We shall see in the following that even econometrics does not compensate for the lacunae. Before doing that we shall elaborate a little further what we mean by the special features of economic observations and the characteristic properties of uncertainty in economics.

The most important special feature of economic observations is that, unlike in the natural sciences, there are no universally accepted, logically satisfactory and practically usable units of measurement. Most economic variables are of the nature of aggregations and index numbers. The universal and characteristic unit of measurement in economics is of course the money unit. But money unit can be used only to measure values. In economics, however, one has to measure quantities as well as prices which are values per unit of quantity. It is for the measurement of quantities that the difficulty about the unit mentioned above holds good. Aggregates and index numbers necessarily involve the use of weights and some base years. In respect of both of them there is an unavoidable arbitrariness and it has not been possible to develop objective methods for selecting the 'best' set of weights or the 'best' selection of a base year. This is one important part of the well known problem of there not being any ideal index number.

As to uncertainty in economics there are two points to be made. The first point is that in the literature of probability one makes a distinction between uncertainty associated with repeatable events and uncertainty associated with once -for-all events. Until the recent development of Bayesian theories, the dominant school of probability in the matter of interpretation of a probability statement was the Frequency School. Die throwing, coin tossing, card playing and such other games of chance offer examples of repeatable events almost in their ideal purity. Given the origin of probability with these games of chance it is understandable that the frequency school will dominate. The concept of probability applicable to repeatable events, however, is not readily applicable to such questions as "Is there life on the planet mars?", or "Will A become Prime Minister in the next election?"

It may now be recognised that the typical questions in economics which are subject to uncertainty, like "Will the price level rise further?" or "What is the probable level of agricultural production in the next harvest?" are more similar to the latter category of questions than questions relating to die throwing or card playing. In consequence the theory of probability with frequency interpretation could be regarded as not at all applicable to economics and the same is true of the theory of statistics in so far as it bases itself on the frequency interpretation. For example, the Neyman—Person theory of hypothesis testing and Wald's theory of decision making may not be treated as applicable to economics.

Our second point would refer to the stochastic properties of the error term in equation systems. This error term is supposd to represent the cumulative effects of all the large number of factors which affect economic variables and which are not taken into account in a particular model. This error term cannot obviously be treated as being capable of repeated observations. The frequency theory not being applicable, there is a need for developing a new approach for justifying the application of standard statistical methods to this error term. Work on this line was begun by Haavelmo as early as in 1944. However it is a highly regrettable fact that very little progress has been achieved since then. As a matter of fact not many attempts have been made in that direction.

It would appear that the events occurring in economics and error terms occurring in econometric models call for the application of such interpretations of probability like personal probability or subjective probability. Such applications might have been difficult a few decades back but the development of Bayesian methods has gone a considerable distance in removing that difficulty.

The deficiencies of standard statistical methods in applications to economics have remained all intact even after the development of the subject of econometrics. This latter subject considers various problems arising from certain peculiar relations between variables which relations are characteristically given rise to by economic theory. This no doubt is an advance. However, the fact remains that econometricians have not considered the problem of how standard statistical methods might require to be modified in the light of the fact that one is dealing with aggregation and index numbers and not with measurements as in the natural sciences. Nor have econometricians paid due attention to the fact that certain parts of standard statistical theory cannot be made use of without accepting the frequency interpretation of probability.

We now come back to the teaching of statistics to students of economics. Most teachers of economics and researchers in economics are blissfully unaware of the inadequacies of the way statistics and probability are made use of in economics. There is a general consensus among economists that they require to learn and require to teach statistics, but few economists are aware that the kind of statistics they learn and teach is far from being best suited to their subject. There are plenty of text books which proclaim to give lessons in what is called "Statistics for Economists". The fact of the matter is that there is probably not a single book which correctly deals with the subject of "Statistics for Economists". Such a book is yet to be written.

The problem we have discussed above is not peculiar to our country. The problem is exactly the same in the best departments of economics in the world. If reform of teaching has to be carried out in our country, if the first book which can be properly called "A Text Book of Statistics for Economists" is to be written in India that would indeed be a path breaking venture. If we follow the long established tradition of our academic world trailing far behind the academic centers of the West, the needed reform may have to wait for an indefinite number of years. However there is no reason why for a change we in India should not take the leadership.

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Interdisciplinary Approach to Social Reality

D.N. DHANAGARE

Ever since Peter Berger and Thomas Luckmann (1971) wrote their famous book *The Social Construction of Reality*, it has become rather difficult to write on 'social reality' with flippant ease. Although the general tendency among social scientists is to commonly use the concept 'social reality' as a term whose meaning is deemed to be known to its users, Berger and Luckmann have made us aware of the deep philosophical and epistemological connotations of the word 'reality' and 'social reality'. The formulation 'social reality' involves intriguing questions in the sociology of knowledge—such as 'what is real' and how is one to know it? and how best the gap between 'reality' and its conceptual reconstruction in the process of knowing can be narrowed down? Apart from these questions pertaining to 'reality', and 'knowledge' in which a sociologist should be no less interested than his colleagues in social philosophy, the problem of social relativity of 'reality' and the ultimate validity or invalidity of knowledge are equally vexing.

This paper, however, is not an attempt to discuss the meaning of 'social reality' in the framework of the sociology of knowledge. We shall, therefore, bypass the deep philosophical questions without underrating their importance. Here we shall take 'social reality' as given—implying that society is an objective reality, although it may be differently perceived, conceived and interpreted. We assume that it is possible to understand society—its basic structures and dynamics—through procedures of empirical observation and verification as well as through intuitive philosophical reflection. The ways of understanding society are manifold and those who seek to know it may not necessarily agree on the adequacy and utility of a particular mode of understanding. It is with this broad positivist conviction that this paper seeks to examine alternative approaches to the understanding of social reality. Particularly our focus will be on the nature, scope and limitations of the interdisciplinary approach and also on the organization of teaching and research activities on interdisciplinary lines.

Two Conceptions of Society

There are two broad conceptions of society—or of the relationship between man and society. One of these may broadly be called the 'emergent' conception which views society or social order as *Sui generis*. Man's interrelationship with his environment, human or otherwise, produce institutions, norms of conduct and all forms of typifications which imply historicity and control. This conception, therefore, treats 'social order' as prior, as something that transcends the individuals who constitute it. The intellectual tradition that subscribes to this emergentist notion of society is often traced to Emile Durkheim's (1964) writings. The other may be termed as the 'immanent' conception which views 'social order' as basically a human product. It implies that society exists only as a product of human activity. Externalization is a fundamental biological need; and human beings have the necessary biological equipment to realise it. The so-called '*sui generis*' social order is thus reduced to the human individuals who constitute it. Thus, society is conceived as nothing more than summation of its constituents. Both these conceptions are somewhat 'ideal-type' polarities that miss the fundamental dialectical nature of relationship between human activity and experience on the one hand and the institutional world that is not only the product of human activity but also an objective reality in its own right. For our purpose then, we may proceed with the following basic premises: (a) that society as a social reality is a human product; (b) that it is an objective reality that is independent of its components and one which is amenable to verification and understanding and, (c) that man is a social product (Berger et. al., 1971 pp. 78-79).

The purpose of restating these somewhat hackneyed premises is to highlight the integral nature of man-society relationship, or of the relationship between man, nature and society. The three are only abstractions and conceptualizations drawn from what is an extremely complex and yet indivisible set of interconnections. This is not to suggest that the founding fathers of social sciences in the late eighteenth and in the nineteenth centuries were grossly unaware of this basically indivisible interrelationship between man, nature and society. Despite this awareness, often reflected in the writings of social philosophers of the pre-industrial era, attempts to study man in relation to nature and society got compartmentalized into a host of specialized disciplines. These attempts eventually got institutionalized into independent scientific domains. Even a cursory look at the schemes of classification of 'sciences' in the writings of August Comte, Herbert Spencer down to Wilhelm Dilthey and Max Weber would reveal the underlying intellectual justifications for creating separate sciences—with peculiar sets of concepts and methodologies which were meticulously sustained and preserved, though seldom advanced, by their disciples in the present day social sciences.

Unity and Duality of Sciences

The intention here is not to deny the fundamental duality of sciences—a notion to which we subscribe. Although at the level of the spirit and ethic of scientific enquiry one could find a basic identity between the 'natural' and 'humanistic or social' sciences, the two realms had to follow entirely different sets of logic or proof of verification and bases of generalizations in their development throughout the nineteenth century and thereafter. What is interesting is the fact that the compartmentalization did not stop there and the process of specialization by disciplines got proliferated not altogether without any purpose or justification. Growth of sociology, psychology, anthropology, comparative religion and politics, economics was mainly in the form of branching off from social philosophy. The development of various specialized social science disciplines was in large measure a response to the nature of transformation wrought about by the industrial capitalism. Elaborate division of labour which entailed high degree of specialization characterized the work organization in modern industrial societies. Advancement in science and technology and their application to productive processes led to atomization and gradual fragmentation of the integral unity of the man-society relationship. Specialization in social sciences, emergence of a number of sub-disciplines, and a somewhat pathological keenness to demarcate boundaries of one science from the other were only manifestations of that fragmentation. The branching off of various specialized social science disciplines and sub-disciplines may be viewed as the need of the time and yet it reflects the segmental view of man which this process encouraged. Specialization in modern society thus acts as a double-edged weapon. It ensures high degree of expertise in a sector of learning but, at the same time, it creates conditions of self-imposed isolation from other pursuits of learning. The latter typifies the present day social science scene in our academies.

The recent trend, therefore, favours interdisciplinary collaboration. The current euphoria in which interdisciplinary teaching and research are often talked about considerably is quite understandable. The University Grants Commission in India has also laid special emphasis on interdisciplinary activities which will apparently receive developmental grants in the Sixth Five Year Plan on a priority basis. Universities with their shoe-string budgets have, however, found in this new thrust an added justification for claiming a larger share of the cake. The euphoria apart, the need for interdisciplinary research and teaching activities—particularly in the field of social sciences—can hardly be overemphasized.

Interdisciplinary Exchange

The Natural vs. Social Science Experience: Before examining the scope and potential for interdisciplinary approach in social sciences, it would be quite instructive to acquaint ourselves with the experience of natural sciences. In this area there has been more meaningful interaction among different disciplines over several centuries and their progress has been more orderly and better regulated. This is not to suggest that natural science have reached the pinnacle of perfection and have solved all problems and riddles. But, among the natural sciences there is a common trunk, going from mathematics to quantum mechanics, then to physics, from there to chemistry, biology and from there even to physiological psychology, we can certainly discover in the main a series of 'decreasing generality' and 'increasing complexity'. Using these August Comte's classificatory criteria, we can certainly place various natural sciences in a hierarchical order where specialists in one would need collaboration of research workers belonging to the preceding sciences in the order (Piaget, 1973: 9-10).

Thus, we find that a physicist constantly finds mathematics indispensable, and theoretical physics, while lending itself to experimentation, is essentially mathematical in its form as well as in technique. Similarly, mathematicians are concerned with physics in that they, by deduction, solve certain problems posed by physics. A chemist cannot go very far without physics and a biologist needs chemistry, physics and mathematics. In all these fields, therefore, interdisciplinary research is becoming imperative. It is facilitated by the nature of things on the one hand and by a clearly defined hierarchical order of disciplines determined by decreasing generality and increasing complexity. Consequently, a whole range of new sciences such as biophysics, biochemistry etc. are emerging with their increasing complexity.

In the field of human sciences, interdisciplinary research can result from two separate but interrelated needs. First is the 'need for more information' and the second is the need for common structures or for analytical integration. At the first level an interdisciplinary collaboration poses little or no problems. It involves exchange of information among related disciplines in the hope that it enriches a discipline's own understanding of the phenomena under study. A discipline's boundaries and autonomy in explanatory terms are not eroded by interdisciplinary contacts at the level of information. It may sometimes lead to adoption of common methods by related disciplines which in turn may pave way for a possible integration at the level of analysis or perspectives. The fulfilment of this second need for common structures, or what we have termed as analytical integration, is beset with a number of problems. Unlike in the natural sciences, in social sciences there is no linear order of sciences ranged between 'decreasing generality and increasing complexity'. On the contrary, in some of the social sciences there is a marked tendency to reduce explanations of diverse phenomena to a single perspective peculiar to that science. Sociologists are often accused of reducing everything to sociology and their reductionism is called, in somewhat pejorative terms, as 'sociological imperialism'. Similar tendencies are noticeable, though with difference of degrees, among some economists, political scientists, linguists, psychologists and so on. I think, the challenges posed by reduction, particularly in social sciences, to some extent explain the growing interdisciplinary trend that is receiving a continual impetus today. Consequently, like in the natural sciences, even in the field of social sciences a whole range of new specialization is growing and we have 'political sociology' and 'economic anthropology' (Godelier, 1977) and the like.

Implicit in our argument is interdisciplinary collaboration at the level of analytical integration. This is possible by, what Piaget (1973: 11) has called, 'reciprocal assimilation by partial réduction of the 'higher' but also by enrichment of the 'lower' by the 'higher'. Going over the bounds of one's own discipline at analytical level implies a synthesis of perspectives, and an assimilation of scientific explanations. Such convergence is warranted more by the kind of facts (social phenomena) social scientists have to deal with. For such a convergence, social scientists must begin by comparing their problems first; if there is convergence of certain general problems, then they must see whether the two sets of problems and social realities they deal with have connections with other areas that are dealt with by other disciplines; and finally to solve those problems, they must examine whether recourse to any cardinal ideas which actually rest on common mechanisms, or on integrated synthesized analytical scheme, is necessary.

Status of Theory in Interdisciplinary Approach

Fortunately, certain social theories and perspectives have an inherently interdisciplinary logical structure although neither their explanatory powers have been fully tapped nor are their adaptive and innovative potentialities sufficiently revealed so far. Reference may be made here to the Marxian general theory of history, particularly 'dialectical materialism', Talcott Parsons' theory of social systems (1970: 3-23), and action frame of reference. (1977: 43-51, 731-57), and also to more recent advances made in structuralism. This is only by way of illustration and not an exhaustive list. Functionalism and structural-functionalism in Anthropology too had this potential for synthesis. However, in the heydays of functionalism 'structure' was used more as a static concept. Consequently, complex social processes tended to be reduced to simple mechanistic formulae—mostly derived from anologies and isomorphism with biological systems. Later, and at a higher level of abstraction, in the systemic analytical framework this narrowness was overcome as 'structure' came to be viewed as having an inherently dynamic character. These developments paved way for some dialogue between the adherents of the dialectical theoretical tradition and those of the systemic theoretical tradition. Attempts to synthesize the two for theoretic assimilation have become common in the European intellectual tradition today. Qualitative differences in their emphases still persist. For example, the systems approach continues to focus on functional equilibrium as 'homeostasis' whereas the dialecticians treat it as 'homeorhesis' or dialectical equilibrium as the essence of the process of structural transformation, (Ball, 1979: 785-96). Althusserian attempts to combine structuralist and Marxist perspectives are pointers in this direction of synthesis and assimilation at the theoretic level (Althusser et. al., 1970: Rex 1974). Alan Tournaine's (1977) recent work may also be mentioned in this context.

In India, so far such an interdisciplinary synthesis is not in sight, at least at the theoretic level. Few social scientists demonstrate even awareness of theory, and its relevance to any systematic understanding of social phenomena is seldom recognised. Even where theory is taken seriously, as is the case of sociology in India, to confine to my own discipline alone, the systemic theoretic exercises have been made by Yogendra Singh (1973), Y.B. Damle (1965: 32-52 ; 1967: 250-81) and others, whereas Marxian dialectical analyses have grown somewhat independently (e.g. A.R. Desai, 1948; 1969) of the former. Even rudimentary efforts in the direction of synthesis are lacking in India.

At the level of theory, to what model of theory should interdisciplinary researchers subscribe? Here, monistic and pluralistic theoretical models provide us with two alternatives. Seen in the true spirit of interdisciplinary effort, a monistic theory model looks incompatible with th tasks of synthesis and assimilation. Such theories are possible only where scientists have succeeded in establishing causal explanations that facilitate predictions and control. The credit for having achieved this is often given to natural sciences but even there skepticism over the tenability of 'causal explanation is growing. In my opinion the nature of 'social causation' is basically different from causation in natural sciences and the goal of social science pursuits could at best be 'understanding' implying Max Weber's exegesis—interpretation' or 'trend analysis' and not 'prediction' (Kaplan, 1964: 346-56). The nature of scientific explanation, and therefore of theory, in humanistic sciences is 'stochastic' or probabilistic'. Various alternative explanations of social phenomena are possible. This leads us to a theoretical pluralist position. The task of interdisciplinary studies is not only to recognize the plurality of forces that operate but also evaluate their relative importance and to indicate which of the interpretations is more tenable over a period of time. Social scientists have to tackle problems of analysis at the 'synchronic' and diachronic levels. Real success of interdisciplinary endeavour would lie in integrating explanations at the two levels. Moreover, theoretical pluralism implies relativism which means that there need not be *the* theory, or *the* explanation for all time to come. What is relatively a more important and determining force at a particular phase in societal development may not remain so in time and space.

The foregoing discussion clearly states my position which is half way between ultra-positivism and pure intuitionism. To some such a position has inherent tensions, if not contradictions. In my view some interpreters of Weber erroneously take his sense of *Verstehen* as entailing an intuitionist position. But this is not so. As Runciman (1969: 12-13) points out, Weber is emphatic about empirical validation of even the most self-evident interpretation. To Weber 'verification of subjective interpretation by comparison with the concrete course of events is indispensable. Thus, some form of both of 'internal comprehension' and of 'external confirmation are necessary to justify any scientific explanation of social phenomena. I believe that interpretative exercises and positivistic procedures are not mutually incompatible and can be blended together.

Three Orientations in Interdisciplinary Approach

All those social scientists interested in studying social phenomena in an interdisciplinary perspective may have three possible alternative types of orientations, viz., cognitive, affective and conative—towards the object of their study. Conventionally, cognitive orientation has been considered not only necessary but also desirable as an integral part of any scientific pursuit. The cognitive orientation itself operates at two levels. At one level it manifests in description of the phenomenon which is being observed in terms of the concepts commonly used in the social science disciplines involved in an interdisciplinary exercise. Here, similarities and differences in the conceptual connotations familiar in respective social science fields must be carefully sorted out first. This will ensure multifaceted descriptions that are mutually complementary and reinforcing. At the other level, the cognitive orientation manifests in explanatory exercise. Scientific explanations attempt to answer questions of 'why' and under what conditions the phenomenon occurs and with what consequences (Gore 1976: 9-10). Most of the social sciences in the Anglo-American intellectual tradition have laid emphasis on both these aspects of the cognitive orientation.

The other two orientations—affective and conative—have so far been considered as inappropriate. The canons of positivism, objectivity and, more particularly, of value-freeness discouraged social scientists from adopting affective or even conative orientation towards social realities. These orientations involve emotional or affective involvement of a scientist and his will or desire that would ultimately reflect in social action. The controversy over 'value-free' and 'value-based' social science is age-old and yet an unresolved one. But, there has been a marked shift in favour of the latter in more recent years (e.g. see Mullick : 1979). Orthodox social scientists, however, continue to cling to 'value neutrality' as the essence of science. To them affective orientation is by its very nature non-objective and conative orientation presupposes certain prescriptive, normative concerns or 'end-states' in terms of which existing reality is sought to be evaluated and modified, if necessary.

Social scientists operating within an interdisciplinary frame have then two options. They may choose to refrain from prescriptive and 'end-state directed activities' and thus confine themselves to purely congitive-type of scientific studies whether descriptive or explanatory or both. Implicit in this position is an assumption that complete objectivity and value-freeness are possible. In such an ideally detached interdisciplinary endeavour, researchers function purely as technocrats and do not wish to commit to any set of value preferences. Alternatively, social scientists can opt for a committed science in which research pursuits have social relevance and are anchored in certain end-states—whether directly or indirectly. An interdisciplinary research team must be homogeneous in terms of its orientation. A team with some members trying to remain 'aloof and detached' and others with avowed commitment will not be a viable one because its members are likely to engage themselves in activities that pull them apart and can function at cross purposes.

My own preference is for a social science that is committed and is socially relevant. My choice is dictated by two considerations. First, that any absolute 'value-neutrality' is not possible except in the form of pure and simple abstraction or mental construct. That 'value-freeness' borders on 'valuelessness'. Often value-choices tacitly influence scientific endeavours and still claims to 'scientific objectivity' are voiced most vociferously. This is far more dangerously misleading because in that case value-loads operate at the unconscious level under the facade of scientific objectivity. Therefore, the best course for social scientists is to make their value-preferences explicit, whatever they may be, and then try to conform to rigours of scientific objectivity. In fact, 'to be aware of ones own value-preferences itself is a step towards scientific objectivity (Srinivas, 1970:4-5). Secondly, in the methodology of social sciences, that is styled mostly on the model of natural sciences, unfortunately 'value-preference' and 'scientific objectivity' are pitted against each other as mutually incompatible polarities. Within the framework of ones accepted values and desired end-states it should still be possible for a social scientist to maintain the standards of objectivity, avoid distortion and examine and present facts in a manner that is replicable so that inter-subjective verifiability could be possible.

Let me illustrate how this is possible. If a social scientist is associated with a particular action-oriented agency that is working for the welfare of the weaker sections, he or she would naturally be looking for the sources of the 'weakness' of those sections. In searching these sources he or she may find that the bulk of the weaker-sections are engaged in agriculture labour and that their miseries could be attributed to a large measure to their exploitation by the landowning classes. If, however, in course of his/her enquiries it is discovered that actually over the years landowners had increased agricultural wages, either voluntarily or in response to the dispensations of the Minimum Wage Act etc., then it is not necessary at all to suppress that fact. In fact, this will not do any harm to the researchers value-preferences and desired end-states. A comparative picture of the increase in agricultural wages on the one hand and profits earned by landowners on the other could be constructed by a further probe. Similarly, prices of essential goods could be investigated to highlight 'real wages' and purchasing power. One can still pursue the 'exploitation' thesis without supressing facts of wage-hikes and benefits accruing to the weaker sections as a result of land-redistribution measures by the state. One must, however, follow a methodology of analysis and interpretation that will yield similar results when others try it with the set of facts presented.

In our view, suppression and distortion of basic facts are most injurious to one's own values and to that extent they weaken the cause or the efforts in the direction of the desired end-states. Within the matrix of value-commitments, a certain objective methodology could be followed without any wavering on ones ultimate value-choices. For social scientists, therefore, 'ends and means' question is of vital importance. Neither is to be subordinated to the other. So far, efforts were aimed at pursuing one at the expense of the other. My submission is that it is possible to blend these two together. This will also end the ivory tower isolation of which social sciences are often held guilty and will render them as socially relevant and serviceable.

Organisation of Interdisciplinary Studies

Most of the universities and other academies of higher learning in India continue to maintain the structure of their teaching and research through conventional academic departments. The structure of such departments has been inherited from the past when disciplines and separate chairs were institutionalized and institutions were chartered to confer degrees at different levels and in various subjects. Organising interdisciplinary activities within this traditional framework hinges largely on the extent to which scholars occupying positions within formally demarcated disciplines are willing to part with their autonomy. Often initiatives for developing interdisciplinary teaching and research are thwarted by apprehensions regarding the possible increase or decrease in workload—a factor which mostly determines developmental grants or positions. In such institutions, the departmental structure does not facilitate much of interdisciplinary activity which can at best materialise purely in the form of personal level contacts and collaboration. Funds are rerely available since within the formal structure of the departments, interdisciplinary effort may be taken cognizance of but not necessarily rewarded.

Sometimes a few departments or scholars from different disciplinary background do come together and form teams not out of any genuine or firm commitment to interdisciplinary effort but just because sponsoring Foundations favour teams, especially interdisciplinary ones, in preference to one-man projects (Srinivas, 1962: 143). This is 'interdisciplinary' effort only in the formal sense because the essence is totally lacking. Neither the nature of problem under study necessitates such a multi-disciplinary participation nor any of the pre-requisites of a serious interdisciplinary collaboration are met.

The other modality is to set up new institutions—whether universities or research institutions to create new organisational infrastructures which will facilitate interdisciplinary contacts—both at the level of teaching and of research. Such centres have come up in recent years all over the world, and India is no exception to this trend. In some universities—such as the University of Sussex in England where I had the privilege to study, the concept of 'department' is more or less abandoned; the Sussex University has established a number of schools, such as the School of Arts and Social Sciences, School of European Studies, School of African and Asian Studies, Institute of Development Studies, School of Applied Sciences, School of Molecular Sciences, Science Policy Research Unit and so on. Under each school there are a large number of Centres, or Studies Divisions who have formulated their own teaching and research programmes. Deans and Committees of the Schools co-ordinate programmes of various centres. It is open for students to associate with any one school and to participate in seminars and courses run by other schools at the same time. In fact, an exposure to courses and seminars outside ones school or centre is not only permitted but also encouraged. To narrate my own experience, I was formally associated with the School of Social Sciences and within it with the Sociological Studies Division. When I decided to do my dissertation on : 'peasant movements in India', I was advised to attend regular 'South Asian History Seminars' in the School of African and Asian Studies and also to do a very rigorous course on 'the Russian Revolution' in the School of European Studies. It is hardly necessary to add that this exposure accross different disciplines and schools was extremely rewarding. Of course, the Sociological Studies Division had its own programme of core and elective courses at the Postgraduate and Undergraduate levels but these courses were open to students seeking degrees in Economics, Philosophy, Comparative Politics, Anthropology and History also, depending upon their areas of interest and their supervisors' advice.

Interdisciplinary activities in the second modality then could be organised around three concerns.

(*i*) *Area Studies :* Here the focus is on a particular area or region as such, and then different scholars could be hired to pursue work on related aspects. Schools of African, Asian, West-European, South-Asian and Latin American Studies and so on belong to this category. Various centres of Asian Studies in some of the universities in the United States, Australia and in Canada, Centre for Latin American Studies, at Cambridge (UK), Research School of Pacific Studies at ANU Canberra (Australia), South Asian Institute, at the University of Hiedelberg (West Germany), Institute of Social Studies (The Hague;, Scandanavian Institute of Asian Studies (Copenhagen, Denmark) and the like could also be mentioned as institutions promoting interdisciplinary work with the area studies bias.

(*ii*) *Thematic Studies:* In some centres of interdisciplinary studies, the stress is not so much on a particular area or geographical region as it is on the choice of themes. The Institute of Development Studies at the Sussex University is a case in point. Here, large number of scholars work on different aspects of development—demography, politics of development, measurement of economic development and so on. Some scholars combine their interest in area-studies with the thematic thrust of the Institute and work on rural development, land reforms, 'Green Revolution' in the Third World countries—mainly South Asia, East Africa and Latin America.

(*iii*) *Method-oriented Studies:* Here it is neither the area, nor the theme, but the perspective and methodology are focussed. A mention may be made of Prof. Immanuel Wallerstein's centre, called: Fernand Brudel Center for the Study of Economics, Historical Systems and Civilizations at the State University of New York at Binghamton, (USA). The Centre's stress is on studies using comparative historical approach and particularly viewing realities within a broad Marxian dialectical materialist perspective. Within this methodological framework, studies, seminar discussions on diverse themes—such as the capitalist world economy, Mexican agriculture, the Ottoman Empire and World Economy, Formation of the proletariat in Modern Iran, etc., are encouraged (Newsletters 1 & 2).

Most of the Institutes and Centres for interdisciplinary research prefer to adopt a combination of the above three modalities. For, it leaves them considerable freedom in choosing thrust-areas, in shifting research priorities over a period of time as well as in hiring expertise to run their programmes.

Most important preconditions for the success of interdisciplinary collaboration may be listed as follows:

(i) Identification of common problems;
(ii) Availability of like-minded scholars-though trained formally in different disciplines but keen to share a common approach and methodology;
(iii) Autonomy of such centres/institutes in decision-policy making, and in financial matters;
(iv) Freedom of recruitment of scholars, more on the basis of their work and their compatibility with the team in which they will be required to work than on the basis of formal degrees; and
(v) Adequate finances, other resources like library etc. and minimum facilities.

In India, the Jawaharlal Nehru University (JNU, New Delhi) has been apparently established on the model of the University of Sussex. The JNU has set up a number of schools with a view to promote interdisciplinary communication and collaboration. Within each school, there are Centres of studies. For example, the School of Social Sciences has such constituents as Centre for Historical Studies, Centre for the Study of Social Systems, Centres for the Study of Political Development, Economic Development, Regional Development, Educational Research and so on. The experience, however, shows that these Centres have became only a little more than new labels for the academic departments in the conventional university system. The pattern of faculty recruitment, with a few exceptions, more or less conforms to the traditional standards and procedures. Rarely do students and faculties of various Centres in JNU come together for drawing up collaborative programmes in teaching and research.

Apart from the JNU, there are several institutions all over the country—such as the Centre for Development Studies in Trivandrum, Centre for Social Studies (Surat), Centre for the Study of Developing Societies (New Delhi), Centre for Studies in Social Sciences (Calcutta), National Institute of Rural Development (Hyderabad), Tata Institute of Social Sciences (Bombay), Gokhale Institute of Politics and Economies (Pune), A.N. Sinha Institute of Social Studies (Patna), Giri Institute of Development Studies (Lucknow), Indian Institute of Education (Pune), National Labour Institute (New Delhi) and the like. Some have thematic focus, others stress on area-studies and still others try to combine different modalities and research interests.

At what level interdisciplinary collaboration is promoted in these institutions and with what result ? This constitutes a topic for a separate study, and cannot possibly be discussed in the ambit of this paper.

Teaching

The most important component of interdisciplinary work is teaching which must be innovative and modelled on the needs emerging from common problems identified for studies. Secondly, the teaching must be anchored in interdisciplinary research also. Results of available research must form an integral part of the teaching. All conventional courses need not be given burial but some of them need to be revitalized and redesigned. Take the example of courses on 'social theory'. In sociology, conventionally the discussion on theory was organised around specific social thinkers from August Comte to Parsons and Merton, or around some Schools of thought (*a la* Don Martindale's text-book). This would not adequately serve the purpose of interdisciplinary teaching on social theory. Instead, a full-fledged two-semester course on : 'Marxism' alone could be planned. Here, the seminal ideas in the classical writings and developments in the later Marxian tradition could be dealt with at length using findings of a numbr of empirical researches on 'alienation', 'embourgeoisiement', 'class consciousness' etc., in a critical framework. To the teaching of such a course contributions can be made by teachers in philosophy, sociology, politics and economics and even freellances and activists. Similarly, a general course on 'Approaches to Social Phenomena' to cover such perspectives as : 'Evolutionsim', 'Structural-functionalism', 'Dialectical', 'Systems analysis', 'Symbolic interactionism', 'Structuralism', 'ethnomethodology', 'the Frankfurt school', 'the Cybernetic Approach' and so on would be extremely useful in promoting interdisciplinary activity.

However, teaching of such courses must be planned properly and must be preceded by a series of meetings and discussions of those who are going to be involved in the lecturing and tutorial work. Above all, these teachers must attend all the teaching sessions regardless of who is going to lecture in a particular session. Moreover, as I have argued elsewhere (Dhanagare 1980 : 24–26) the entire social science learning in India must be properly rooted in social, political and economic history.

All the interdisciplinary teaching need not be lecture-based. Some of these courses may be planned as reading assignment courses, or as seminar courses. But, sufficient ground-work must be done before launching such courses so that they become more meaningful and purposeful. In the area of rural development, special courses on Evolution of Agrarian Social Structure, Land Reforms, Rural Elite and Politics, the Weaker Sections, the Green Revolution, Rural Poverty, Capitalist development in Indian agriculture, Rural economy, Peasant movements, etc. could be planned. Detailed reading lists must be prepared and the scope of each course must be carefully outlined in addition to giving specific assignments of writing term-papers depending on students' and teachers' interests.

Above all, the ends of interdisciplinary research and teaching can be brought to fruition only by doing it rather than only by discussing or planning it.

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Educational Research as Scientific Inquiry*

M.S. YADAV, S.B. MENON AND P. ARUN KUMAR

The nature of Scientific enquiry

The basic aim of science is to explain, control and predict physical and social phenomena. Generation of knowledge is the progressive attempt at explaining these phenomena through theorisation. Theorisation is a process through which workable theories are propounded and progressively revised if necessary. 'A theory is a set of interrelated constructs (concepts), definitions and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena'[1]. Examining the history of science, it could be seen that the generation of knowledge has been following a chain of activities involving the interaction between human mind and environment. This chain could be seen to involve two patterns of interactions. One, a process involving casual observations of phenomena followed by inductively arriving at summaries of observational findings which lead to theory building. The second, a process which starts with a proposed theory or rational model governing the relationships among various constructs in the phenomenon, from which could be deduced a set of hypotheses regarding the behaviour of the said phenomenon under specified conditions. In fact, the process of generating knowledge involves a synthesis of these two patterns. Casual observations, alongwith the already existing structure of knowledge, generate a working theoretical framework. This theoretical framework would involve certain hypothetical relationships among the constructs inherent in the phenomenon. From this, on further analysis, could be deduced certain observable situations which manifest the hypothesised relationships among the constructs involved. These situations, in turn, could be operationalised and utilised for testing the hypotheses. This testing process would validate the theoretical framework that has been evolved, and might suggest certain revisions in it which in turn, would generate further testable hypotheses. Thus, the evolution of knowledge involves the cyclic process consisting of propounding theories and progressively revising them through hypothetico deduction and empirical validation. This cyclic process of generating knowledge, when carried out through organised efforts, may be termed as research. The whole chain of activities carried out in the scientific endeavour for creating knowledge can be schematically represented as follows :

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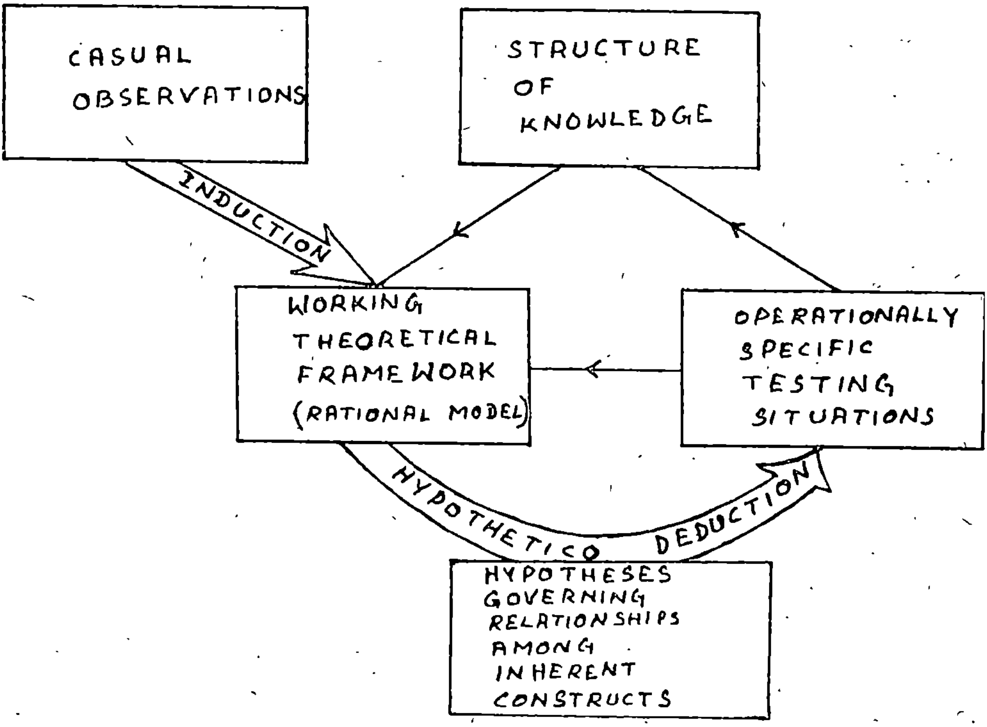
* The paper was presented at the Seminar on Methodology of Educational Research organised by the Centre of Advanced Study in Education, M.S. University of Baroda in August, 1980.


CASUAL OBSERVATIONS
STRUCTURE OF KNOWLEDGE
INDUCTION
WORKING THEORETICAL FRAMEWORK (RATIONAL MODEL)
OPERATIONALLY SPECIFIC TESTING SITUATIONS
HYPOTHETICO DEDUCTION
HYPOTHESES GOVERNING RELATIONSHIPS AMONG INHERENT CONSTRUCTS

Research in social and behavioural sciences

In systems where the inherent variables are identifiable, discernible as related to one another in explicit causality, and amenable to precise measurements, their description, control and prediction are possible to a great extent. This is true in the case of physical systems and so research endeavours in physical sciences are characterised by a greater degree of precision and control. Hence, the model discussed above regarding the generation of knowledge suits research endeavours in physical sciences more appropriately.

On the other hand, social and behavioural systems are more complex in nature. This complexity is not necessarily due to the multiplicity of variables involved, but more due to the fact that the variables are not easily identifiable and are less tangible to precise measurements, when compared to those in physical systems. Also, the interplay of these variables is highly complex and their relationships are nonlinear and inconsistent through time. Manifestation of the relationships, among variables in such systems changes in its extent and even quality when the configuration of relationships among variables changes, and the more serious aspect of these change patterns, from a scientific point of view, is that they often occur in not very consistent ways. This makes them less amenable to precise measurements and seriously hampers the possibility of reproducing them under similar conditions which in turn, would make any attempt at giving reasoned accounts of the situations operating in these systems, rather hazardous. Hence, research in social and behavioural sciences is less likely to arrive at precise descriptions of various phenomena and consequently is less capable of control and prediction. This, however, should not be taken to mean that no meaningful effort can be made at trying to understand various phenomena in social and behavioural systems. It is only to highlight that the methodology of research developed and perfected for physical systems may not find full application in research endeavours in social and behavioural systems. Such a position leads to a conclusion that research efforts in social and behavioural sciences may not bring out very specific relationships among variables, and resultantly may not be able to control and predict the various phenomena under specified conditions. Since, the social and behavioural systems are complex in nature, studying the relationships among the many variables involved could be done only by first making them operant under simplified conditions. This can be done by identifying a limited number of variables and studying their behaviour, and their interplay under conditions where the intervening variables are controlled to the extent possible. But, this by itself may not give the exact pattern of relationships among the variables, since controlled situations are obviously not fully representative of the actual situation. Therefore, studies of the type mentioned above will have to be conducted progressively, gradually lifting the controls and thus incrementally approximating the real situation. What should follow are studies in actual conditions, attempting minimum controls, conducted over a long stretch of time, aiming at recording the behaviour of the variables in relation to one another, and trying to identify certain inherent trends. This purports to include also *ex post facto* research applied to historical studies, sociological status studies, etc., where certain variables are brought under selective observation and their interrelationships studied, with no manipulation attempted. Emerging through such efforts would be certain broad tendencies in the relationships among the variables, under specified conditions. In fact, in social and behavioural sciences, it is these tendencial relationships put to continual tests and revision, that constitute the progressive generation of knowledge.

Educational research—a scientific inquiry

Education is a socially contrived system which aims at enhancing the efficiency of societal functioning. It is concerned with societal development, and hence has under its purview all aspects of social life that would make development possible. This makes education as a discipline, cut across the formal boundaries of those social and behavioural sciences which deal with the various aspects of the societal system. The function of education as a discipline, therefore, would be to identify the educational components wherever they exist, differentiate them and evolve suitable operational models for aiding the process of societal development. This would determine broadly the purview of educational research. Educational research, therefore, would include studies on the instructional process, its dynamics, its organisational structure, its relation with the total societal system with its value structure and all its other subsystems, its evolution in relation to the societal evolution, its relationship with the development of the individual and the society, etc. Obviously, educational research has social and behavioural aspects, and therefore, would have the limitation due to complexity and lack of precise measurement and regourous control, which have been mentioned earlier regarding social and behavioural systems in general. Hence, educational research also would follow the course, as outlined earlier, in respect of research in social and behavioural sciences in general. Educational research would include studies conducted with necessary controls under manipulated conditions in order to arrive at certain relationships among variables and knowledge about the potential of different inputs in the system. Concomitantly, studies with a broader perspective, encompassing larger number of variables with minimal control on the lines of quasi-experimental designs would be conducted[2]. Also significant are those basic studies, historical, sociological and psychological in nature, including those that were referred to earlier as *ex post facto* research, which probe into the evolution of concepts and practices in education under different conditions and generate relevant knowledge about the interplay of large number of variables in the society. As was stated earlier regarding social and behavioural sciences in general the outcome of research endeavours in education also would be certain broad tendencial characteristics governing relationships among the variables involved. On the tendencies that emerge out of controlled and quasi-experimental studies, and the philosophical insights developed through the basic studies, will be based the developmental studies in educaion. Developmental studies in the field of education aim at producing materials, techniques, processes, organisational formats for instruction and even broad educational models for the society.

That the developmental studies are based on the insights gained through the other basic studies should not be taken to mean that they are mere applications of the tendencies emerging out of the latter. Developmental studies are conducted in actual conditions, and hence would give scope for a much larger number of variables to operate resulting in a very complex interplay, and thus may bring out new patterns of relationships, variant from those which emerge from controlled conditions. Thus, these developmental studies form a distinct class of research aiming at evolving a different set of relationships. Moreover, education as a subsystem of the society, as mentioned earlier, is intricately linked with development[3]. Hence educational research becomes purposive, in that, even when it merely describes the relationships inherent in various educational processes, it draws out certain implications that might ultimately help evolve suitable models for development. Thus, classifying educational research endeavours as fundamental and applied may be erroneous, because both basic studies and developmental studies could be termed as fundamental in their own right, in that both contribute to the progressive generation of knowledge in education which in turn, would aid development.

The above discussion has visualised the evolution of the models for development as the products of educational research. This runs the risk of being taken to mean that these models are finished and perfected ones ready to be applied to gross problem situations in the developmental context. Hence, this demands a few qualifying remarks. The problem situations in the developmental context, are highly complex in nature, each one of them unique in its own way. That is to say, the sets of conditions prevailing in two situations, however similar they may be, cannot be taken to be identical. Therefore, a model generated for development in one context cannot be expected to work in another context with the same efficiency. These models can be taken only as broad frameworks of operation, which need to be sufficiently altered as per the infrastructural characteristics of the problem situation and progressively revised through built-in feedback evaluation mechanism. Moreover, in a pluralistic and open society, there may be different perspectives from which a given problem situation can be viewed. Hence, it is possible to visualise alternative developmental models for a given situation. This, by implication means that putting into practice any model for development evolved out of educational research, involves an element of judgment on the part of those involved in the implementation process. This presupposes considerable flexibility in the models evolved. Educational research, as it follows from this argument cannot arrive at 'the' perfect model for omnibus adoption in any developmental situation. What it actually does is to offer alternative models, empirically found effective through progressive tryouts, under given sets of conditions. The alternative models emerging out of educational research would form the input alternatives available for development. The development of alternative models, as well as selection and adoption of the most suitable ones form the central theme of educational research, and this delineates its scope. As discussed earlier, education is a subsystem of the total social system contrived for societal development. It may be necessary to view it in the systemic perspective to make sure that when educational components are identified and differentiated while evolving operational models for societal development, all their linkages and operational aspects are taken into account. This systemic view, therefore, will become an essential ingredient of scientific inquiry as applied to educational research.

That the whole process described above operates in a societal system which is constantly in a state of flux, demands special mention here. The society undergoes changes continuously, in its structure, relationships among its many components, the value system which governs its functioning, etc. These changes in turn will have influence on the meaning of such basic concepts as 'development'. That is to say, there would be corresponding effects on decisions regarding directions of development, as well as the various inputs and models to accomplish them. Since educational research ultimately aims at giving scientific basis to *a priori* decisions in developmental contexts, the various aspects of the societal flux which affect the nature of the developmental contexts themselves would bring about changes in the scope and structure of, and priorities in educational research. This would mean that educational research also evolves in terms of its structure, character, scope and methodology, in consonance with the societal evolution.

Conclusion

Educational research deals with a system which offers certain inherent constraints, in that it is complex and is in a constant state of flux. This calls for research endeavours at three realms, viz., controlled, *ex post facto* and developmental, one related to another in a mutually complementary manner, together which form what could be described as a process of scientific inquiry. The outcome of such a process would be the knowledge about the tendencies in relationships among the inherent, constructs, which through progressive refinements in the process of inquiry would lead to insights into more exact relationships. Generating from this would be the educational models for societal development which, however, unilaterally may not be capable of influencing societal changes, in that the society in a particular epoch would tend to impose some sort of a structure on the knowledge generated and would be rather selective in its acceptance of the educational models that can be visualised. This is essentially the characteirstic of knowledge and knowledge generation process in general. What educational research should strive for is to sensitise itself to the needs of the society, sharpen its tools and techniques, and thus refine its methodology progressively for more exact explanations of the educational phenomena, and more accurate control on and prediction of them.

Notes

1. Kerlinger, F.N., 'Foundations of Behavioural Research', Holt, Rinehart and Winston, New York, 1964. p. 9.
2. Suggesting that these studies could be on the lines of quasi-experimental designs should not be taken to recommend a less scientific approach in educational research. What it implies is only that education, as was mentioned in relation to the social and behavioural sciences in general, involves constructs, not very amenable to that extent of precision as can be achieved through very sophisticated research designs
3. Here the term 'development' refers to various aspects of societal development as discussed earlier in this paper. It may thus be differentiated from the term 'development' used with reference to 'developmental studies' where the reference as discussed earlier, is to the development of materials, techniques, etc.

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Psychology in Search of an Identity

SHAKUNTALA BALARAMAN

The growth of the psychology profession in India has been slow compared with other professions like Engineering and Medicine. This fact should not be interpreted to mean that there has been no great need for psychological services in the country but, rather, that our policy-makers and the public have been unaware of the useful services psychologists can render to society and the nation. Also, at the dawn of Independence, although the psychology profession had some insights into its diverse societal functions, it failed to press for major policy decisions which would provide psychological services to millions of men, women and children who needed them. It is, therefore, not surprising to find that psychologists are excluded from prestigious national committees and commissions and that there has been a low social demand for psychological research from government and semi-government agencies, industries, business and educational institutions.

The foundations of scientific psychology in India were laid with the establishing of Psychology Departments and Laboratories in Calcutta University (1915) and the University of Mysore (1924). The Indian Psychological Association and its official organ, the Indian Journal of Psychology, made their appearance in the early 1920's. Today, there are more than 30 University Departments of Psychology and about 2500 trained psychologists. A recent survey conducted by the Indian Institute of Management, Ahmedabad, estimates that about 44% of the nation's psychologists hold Ph.D. degrees in psychology and that the predominant areas of interest are social, industrial, organisational and personality psychology[1].

It is unfortunate that after 30 years of Independence, a majority of our psychologists live and work only in urban areas, doing university and college teaching, research and administration. They generally hold jobs in academic institutions and spend a very small percentage of their time doing applied "field work" in hospitals, industries, villages, schools, the services etc. Reviewers of Indian psychological research have deplored the tendency of Indian psychologists to depend on the West as regards the kinds of research problems selected and the methods and techniques used[2]. One criticism is that problems are being researched not because they are of vital importance to our society but because the investigators happen to be interested in them. Most of the research studies are said to be adaptations or repetitions of studies conducted in the West, so much so that a critic has remarked that psychology should actually be called "Adaptology"[3].

Since millions of our people have little or no contact with a psychologist, an uninformed or distorted image of his role and work activities prevails. There is the danger that in the coming decades, professional sociologists, social workers, educationists and others will take over the roles and activities of psychologists and that the latter will lose what little identity they have in this country. An illustration of this type of "role-stealing" can be observed in the Management field where self-ordained "behavioural scientists"—with hardly any basic behavioural science training—make authoritative pronouncements on subject areas pertaining to psychology. Unfortunately, Indian managements are unaware or unwilling to acknowledge the tremendous contributions that have been made and continue to be made to the behavioural side of management by a distinguished list of psychologists—Lewin, Maslow, Likert, Ghiselli, Katz, Hertsberg, Dunnette, Porter, Lawler, Luthans, to mention only a few of them. It is not too late for Indian psychologists, individually and collectively, to exert themselves and work towards the establishing of a more definitive, positive professional identity.

Since professional identities are inevitably linked with professional goals, attempts should be made to identify the national development goals towards which psychologists can contribute and to specify the professional activities which will fulfil such goals in the coming decade. Group consensus on this futuristic problem may be reached by way of national conferences, seminars and Delphis. During these exercises, pragmatic questions should be raised and pragmatic solutions sought. For instance, in what specific ways can psychologists contribute to family planning programmes in urban and rural areas ? What is their role in the education and training of the mentally retarded, the culturally deprived, the deaf, the dumb and the blind ? How may they contribute to personnel management and management training programmes ? What constructive activities should they engage in, to further the cause of national integration ? Should psychologists be attached to schools and municipal health centres ? Should Departments of Clinical Psychology be attached to General Hospitals ? The answers to these and many more questions should be couched in operational or behavioural terms and not in vague generalities.

At the same time the implications of the professional goal structure for post-graduate education should be worked out. Psychologists could contribute to national development through well-grounded theory, distinctive research methodology, applied or problem-focussed research and professional skills of consultation and human service. In all countries, and more so in developing countries, there is a pressing need for "Community Psychology". This umbrella term is used advisedly to cover the various applications of behavioural science to *planned change in the community and to effective intervention technologies for the treatment and prevention of social problems*[4]. Used in this context, the term "Community" refers to all types of communities—villages, urban, school, university, slum, industrial labour, hospital, caste and class. The renowned psychologist B.F. Skinner describes the need for community psychology in the world of today with these words: "The application of the physical and biological sciences alone will not solve our problems because the solutions lie in another field. Better contraceptives will control population only if people use them......New methods of agriculture and medicine will not help if they are not practised, and housing is a matter not only of buildings and cities but of how people live. Overcrowding can be corrected only by inducing people not to crowd, and the environment will continue to deteriorate until polluting practices are abandoned... we need to make vast changes in human behaviour, and we cannot make them with the help of nothing more than physics or biology...What we need is a technology of behaviour"[5].

Among the social sciences, psychology alone has made some progress in the establishing of a technology of behaviour (or a scientifically based theory of social learning procedures). The current limitations of the behavioural paradigm should not dampen or deter those who are involved in its application and extension to community problems. Efforts to alleviate social problems will necessarily require modifications not only of human behavioural repertoires but also of environmental events. Therefore, behavioural community psychology by itself cannot solve current or future social problems. An "open systems" model is envisaged in which psychologists work in co-operation with inter-disciplinary teams of other professionals and para-professionals, to develop and disseminate effective programmes for institutional, group and social change.

In a sense, all community psychologists are activists and postgraduate training programmes in psychology should inspire students to become activist. The job market may not be in a position to absorb all such activists at first but "a behavioural paradigm which is wedded to a commitment to some forms of social activism would be more influential and decisive than the same paradigm not augmented by such a commitment"[6].

If postgraduate Departments of Psychology are to provide intervention strategies to solve social problems, they should devote much of their time to a wide spectrum of behavioural-environmental community projects relating to many aspects of our society: culturally deprived children, the physically handicapped, mental illness and mental retardation, family planning, adult literacy, work behaviour, organization development, student unrest, communal tensions, rehabilitation of hospital patients, crime and delinquency, alcoholism, superstitious behaviour and environmental problems such as litter control, recycling, energy conservation, water pollution, population migration etc. etc. Most Ph.D. degrees in psychology should emanate from such applied research projects. Basic research which promotes the *Science of Psychology* should be the main concern of a few advanced Centres for Psychology where the emphasis would be on theory construction, research methodology, psychology as a natural science and psychology as a social science.

Postgraduate training programmes at the Ph.D. level should be revised and extended to include a year of practical training "in the field" and more interdisciplinary course work drawn from anthropology, architecture, biology, criminology, demography, education, management, political science and psychiatry. New psychology courses on Behaviour Modification, Community Psychology, Cross-cultural Psychology, Organization Development and Conflict Resolution should also be offered to equip postgraduate students for their new role as change agents. Since the half-life of psychological knowledge is estimated to be about 10 to 12 years (on an average)[7], University Psychology Departments should regularly organize continuing education programmes for psychologists and, if necessary, invite outstanding practitioners from abroad to lecture on areas of research which are relevant to our national priorities.

Postgraduates should be offered a choice of training programmes which will prepare them for a variety of jobs aside from teaching. The existing specializations in psychology (such as educational, social, industrial, clinical etc.) may continue but should be characterized by an inter-disciplinary approach. Doctoral and post-doctoral candidates should be trained to function as :

(1) Full-time, self-employed, independent practitioners or consultants e.g. as school psychologists, industrial psychologists, psychotherapists, student counsellors and psychometricians.
(2) Partners in a group practice e.g. Industrial Consultancy or Organizational Development ; Group practice in specialties such as educational and child psychology, offering consultancy services to schools and community organizations.
(3) Full-time employees of a service organization, e.g. as clinical psychologists in a government hospital or as social psychologists in rural and community development projects.
(4) As employees of organizations which are not primarily devoted to the delivery of psychological services, e.g. as behavioural or social scientists in management training institutions, as personnel managers or staff welfare officers in industry, government organizations and departments.

Despite the disturbing trends noted earlier, I do feel that psychology can look to the future with hope and confidence. It is not too late to establish a positive professional identity in the coming decades. This can be achieved by reorienting professional activities to social change at the community level and reorganizing postgraduate systems of education in keeping with this goal. In this, the hundred-and-second year of the birth of psychology, it will be a fitting tribute for our psychologists to dedicate themselves to the promotion of human welfare and happiness in Indian society.

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Continuing Education and its Role in Human Resource Development in India

M.A. HUSSAIN

The concept of Continuing Education movement originated in the industrialised countries of the West over a century ago with the adoption of new modes of production and distribution of goods to meet the growing needs of the society. It occurred in different sections of the society at different levels. Changes occurred in politics, economy, culture and education and in different units of the society. Any change in one particular sector or a unit has its impact on the rest. No individual can remain untouched by change. Moreover, change does not occur everywhere, at the same time and same speed.

Available researches in the literature of the subject show that there have been extensive changes in the availability and demand for consumer goods and in the organisation of the means of their production. As a result, in the vocational world, some jobs are disappearing, while new ones are emerging, which require new kinds of skills. Because of these phenomena, today's school children may be preparing to enter a social and vocational world that will not exist at the time they become adults. This is true of both the developed as well developing countries.

In India, socio-economic transformation is gradually taking place. We are evolving a more or less agrarian culture into an industrial culture. We have been in the process of evolving our own political and socio-economic systems. In certain sectors of the economy like the areas of engineering, electronics, textiles, agro-industrial technology, etc., the developments are outstanding. In these areas there have been not only rapid changes in the methods of production and distribution but also marked changes in the nature of education and earning patterns. But such changes in the earning pattern benefited only the upper income groups which constitute a small segment of the Indian Society, whereas 70 per cent people continue to remain illiterate, who are not at all affected by the development process and their socio-economic conditions are stagnant. Many young children from the lower strata of the society are compelled by economic conditions to drop-out from school in order to get employment early in life. This hampers the socio-economic development of a vast majority in general and the vertical mobility of the people in particular, because the present education is not related closely to the people's inner most needs. There are many inconsistencies between education at school as well as at home and such inconsistencies lead to wastage, dropouts and stagnation in the field of education. These are some of the gigantic socio-economic problems which can be profitably handled through the appropriate educational process.

In such a situation, Continuing Education can be treated as an agent of change. Human life has come to a pass where intermingling of people with different cultures and backgrounds had generated new ideas of advancement. The emphasis of the programme of Continuing Education on upliftment of the less educated group into the mainstream of the labour market can be treated as an important component of human resource development.

Continuing Education is assumed here as an organised activity of re-education of working manpower in various sectors of economy in order to keep up their knowledge and skills with the latest developments in the field of science and technology according to their needs and socio-economic environment.

Skills and educational competence of the labour-force act as an agent of economic progress. Development in manpower skills is a necessary pre-condition for the progress of a nation. Continuing Education helps the labour-force to acquire necessary skills of respective trade of workers, which normally enhance productivity, efficiency, managerial skills and earnings, thus generating economic growth. Continuing Education, in this context, enables them to realise their full potential as an individual and to contribute effectively in the socio-economic development of society.

What Continuing Education is?

Continuing Education consists of four important elements:

(1) Knowledge, wisdom and value system to enable the students/ workers to make appropriate choices at every stage in their life.
(2) Capacity to adjust creatively to the life-cycle and to the changing social, economic, technological, political and cultural environment, in which the person lives.
(3) Nourishment and assistance required to grow to one's full potential.
(4) Development of a sense of awareness and social responsibility and creation of a capacity for and opportunities to provide adequate service to others.

The Continuing Education programmes are mainly intended to serve those people, who for some reason or the other could not get sufficiently educated but are still keen to acquire need based skills and knowledge either for its own sake or for improving their prospects in life.

Role of UGC

The University Grants Commission has formulated the following objectives with a view to clarify ideas about the goals of Continuing Education so that within this broad framework, each university can take up programmes:

(i) To meet the needs of the expanding universe of knowledge and to help in understanding and communicating new ideas and techniques;

(ii) To enable the individual to fill the gaps in intellectual and professional knowledge and to provide to those in professional and specialised job, opportunity to keep up with the pace of development of knowledge through re-training, in-service training and refresher programmes;

(iii) To formulate different patterns of acquiring education as a life-long and continuing activity;

(iv) To develop more specific and result-oriented programmes for the weaker sections of the society particularly for men and women living in the slums and rural areas including students and teachers;

(iv) To frame and offer such courses as might lead to the acquisition of diplomas and certificates or even degrees by such people as are already settled in life and yet wish to acquire greater academic and professional competence; and

(v) To conceive and implement special programmes of training workers and educator specially for backward communities and areas like the tribal people, rural workers, industrial workers and other neglected classes.

To fulfil the above mentioned aims and objectives, the University Grants Commission set up Correspondence/Adult/Non-formal/Continuing Education Centres at various places in the country. In the early's sixties, some of the Schools of Correspondence and Continuing Education were established to improve the educational qualifications of people, who were working in the various walks of life. Later on, it was realised that a large section of the society has been neglected by this process. In the seventies, Adult/Non-formal/Continuing Education Centres, were set up to meet the educational and vocational requirements of the illiterates, semi-literates, house-wives, industrial and agricultural workers, professional workers and others. At present, approximately 50 Correspondence/Non-formal/Adult/Continuing Education Centres are functioning in the country. These centres are affiliated to respective universities of the region.

Area of Study

The main focus of this study are the geographical distribution of Continuing Education Centres, their activities, nature of the programmes, clientale and their socio-economic background.

Based on above objectives a questionnaire was prepared and validated in the School of Correspondence and Continuing Education, Delhi. A list of Institution's* was obtained from University Grants Commission. Information was sought from 50 Correspondence/Adult/Non-formal/Continuing Education and Agriculture Extension Institutions all over the country by mailing the questionnaire. Only 26 institutions responded. After obtaining the desired data, it was tabulated and analysed by using simple percentage.

Looking at regional distribution of the Centres for Continuing Education, excepting a few a large number of the institutions is located in the rimland of the country. This uneven distribution of institutions may be associated with the politico-socio-economic development of the coastal areas like Gujarat, Maharashtra, Mysore, Kerala and Tamil Nadu which are exposed to outsiders with the concomitant growth of exchange economy and urban centres. It has resulted in change in the socio-economic conditions and has lead to industrial development in the peripherial regions of country.

The working manpower of these industrial complexes are in constant need for refreshing skills in managements, supervision, engineering, repairing etc. in relation to changes in techniques of production and distribution of goods. To meet this challenge, institutions were opened at Rajkot, Ahmedabad, Baroda, Pune, Mysore, Bombay, Madras, Hyderabad, Dhanbad, and Jadavpur. On the other hand Madhya Pradesh, Rajasthan, Uttar Pradesh, Orissa, Assam and North-Eastern States were neglected very much in the field of Continuing Education, which may be due to their stagnant economy, halty and sporadic industrial development and large concentration of SC/ST population in the region.

The Centres for Continuing Education (CCE) are performing various type of activities, which are generally guided by the immediate needs of people of the hinterland. There is heavy concentration of industries for instances in cities like Bombay, Madras, Surat, Baroda, Dhanbad, Ahmedabad and Jadavpur. Since skills and techniques required for production are well synchronised with the technological advancement, respective centres for continuing Education are organising sophisticated courses in the human resource development like engineering, electronics and similar fields. Similarly Centres for Continuing Education of Aligarh, Srinagar, North Eastern Hill University (NEHU), Waltair, Jaipur and Srinagar (UP) are located in economically backward regions of the country in comparison to the former. Therefore, they are organising general courses in functional literacy like nutrition, dress making for children, masonry, brick-making, etc.

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* Jaipur, Madras, SNDT Bombay, Pune, Delhi (2), Baroda, Surat, Srinagar, Nilokhari, (Haryana), Dhanbad, Sagar, Anand (Gujarat), Patilala, NEHU (Shillong), Waltair (A.P.), Mysore, Aligarh, Trivendrum, Ludhiana, Chandigarh, Jadavpur, Rajkot, Calicut, Roorkee, Srinagar (U.P.) Hissar, Hyderabad, IITs (Delhi, Madras, Kanpur, Bombay, Kharagpur, Gauhati, Bombay), etc.

The Analysis

An analysis of the programmes of various Institutions in different states reveals a wide range of activities from a simple one to the very complex, where the latter requires the application of highly sophisticated technology. For further study of CCE's functions, content, clientale, their socio-economic background, etc., we can divide them into seven categories, as given below:

1. Professional courses; 2. Courses in human relations, management and organisation; 3. Courses in training personnel; 4. Programme for women; 5. Courses in extension education; 6. Programmes for rural community; and 7. General courses.

These programmes are organised to improve the productivity/competence and efficiency of their job and in respective field. The duration of these courses, organised by different centres varies from three days to one year. Some programmes are conducted twice or thrice in a year.

The socio-economic and educational backgrounds of the people attending these courses are analysed as under:

The professional programmes are organised by the CCE's of Jadavpur, Pune, Baroda, Waltair and Dhanbad on aspects of planning, high voltage techniques, mining industry, mineral engineering, application of computer in mines, crop husbandry, agricultural meterology, etc. for professional (Pr) and semi-professional (SP) people working in the field of mining industry, engineering, agriculture, electronics, etc. The occupational background of some course participants is presented in Table 1.

Table 1

Name of Courses	*University/ Institutions*	*Occupational Status**	
		P (%)	*SP (%)*
High Voltage techniques	Jadavpur	—	80
Hermetic system	,,	45	55
Productive techniques	Dhanbad	100	—
Telecommunication in mines	,,	100	—
Product engineering	Baroda	—	100

* *Professional (Pr), Semi-professional (SP), Skilled Workers (SW), Semi-Skilled Workers (SSW), Labours (Lab.), Farmer (F).*

The level of the education and economic status of participants among these courses are given in Table 2.

Table 2

Name of Courses	*University/ Institution*	*Level of* Education (%)*			*Economic Status** P (%)*		*SP (%)*	
		PG	*G*	*HS*	*LM*	*M*	*UM*	*R*
Management concept Techniques	Jadavpur	90	10	—	—	60	30	10
Telecommunication in mining	Dhanbad	80	20	—	—	65	35	—
Management	,,	100	—	—	—	65	25	15

* *Post-Graduate (PG), Graduate (G), Higher Secondary (HS), Middle (M), Primary (Pri) Literate (L), Illiterate (I).*

** *Poor (P), Lower Middle (LM), Middle (M), Upper Middle (UM), Rich* (R).

Tables 1 & 2 reveal that the majority of the participants are graduates and post-graduates. And economically, the majority of them belong to middle and upper middle income groups, 10 to 15 per cent coming from high income groups. These inservice training courses are meant for high-level personnel to improve their professional skills in their trade, and programmes are quite useful in enhancing their productivity in respective trade.

The courses in human relations, management and organisations are conducted by CCE's of Madras, Pune and Baroda mainly. The aspects covered by the above institutions are in various field of management like hotel management, marketing, library, industry, resource-development, etc. Programmes are meant to improve the managerial, organisational supervision and administrative skills among working hands on the respective jobs.

The courses are mainly organised for professionals and semi-professionals who are working in big concerns. The occupational and educational backgrounds of some selected programmes are given in Table 3.

Table 3

Name of Courses	*University/ Institution*	*Occupational Status*		*Educational level*		
		Pr	*SP*	*PG*	*G*	*HS*
Material management	Madras	100	—	13	67	20
Financial management	,,	76	26	28	72	—
Marketing management	Baroda	—	100	2	98	—
Task management	,,	—	100	1	99	—

Table 3 reveals that majority of participants are professional or semi-professional. Their level of education is also quite high, for example, 99 per cent of the participants are graduate in task management course. As far as the economic status of the participants is concerned, we find that, 10 to 30 per cent belong to rich, 50 to 80 per cent belong to upper middle, and 10 to 20 per cent belong to middle income groups in various courses.

The CCE's Pune, Baroda, Ludhiana, Waltair and Hyderabad, have organised courses in training personnel in general and repairing and training courses in radio, television, scooter, motor cycle, watch, photography, tractor, farm machinery in particular, etc., to develop technical competence among skilled and semi-skilled workers. Some of them are unemployed, while others are working in private and public establishments.

The level of education of these participants varies from illiteracy to higher secondary level. The data shows that trainees are belonging to lower income and poor families.

The programmes for women are conducted by the Centres for Continuing Education of S.N.D.T. University (Bombay), College of Home Sciences (Pune), Baroda, Literacy House, Andhra Mahila Sabha, Hyderabad and NEHU. These coureses cover the fields like dress-making for children, art, tailoring, home science, food preservation, family planning, nutrition, etc. These activities are mainly organised for wives of those in the armed forces, urban-dwellers and working women. Some of the courses attract people with a varied backgrounds (SNDT, for instance, has provided a course in gardening for women).

The participants in these courses can be broken up as follows: 75 per-cent housewives, 15 per cent professional and semi-professionals, 5 per cent business, 2·5 per cent army officers' wives, & 2·5 per cent from other occupational backgrounds.

Table 4

Name of Course	*University/ Institution*	*Education level (%)*					
		PG	*G*	*HS*	*M*	*Pri*	*I*
Gardening	SNDT	20	37·5	20	12·5	10	0
Interior Decoration	Waltair	—	10	80	10	—	—
Embroidary	Baroda	—	5	35	30	5	25
Making dreses for children	,,	—	—	25	20	25	30

Table 4 indicates that the level of education of participants varies from illiteracy to post-graduate level. The educational level of majority of the participants are higher secondary and above. In embroidary and dress-making for children, 40 to 55 per cent are either illiterate or of the primary level. Mainly these participants, belong to middle income groups.

The Extension Education (EE) courses are conducted by the Department of Extension Education, Anand, Gujarat, Ludhiana (Punjab) and Nilokheri (Haryana) on poultry, piggery, tractor and farm machinery, weed and pest control of crops and animal husbandry. The courses are organised for farmers, village level workers, field workers of Small Farmer Development Agency, Drought Prone Area Programme.

The level of education and economic status vary according to the courses and their requirements. The following Table reflects their socio-economic background.

Table 5

Name of Courses	*University/ Institution*	*Educational Level (%)*					*Economic Status (%)*				
		PG	*G*	*HS*	*M*	*Pri*	*P*	*LM*	*M*	*UP*	*R*
Tractor and farm machinery	Ludhiana	3	14	43	28	12	40	43	17	—	—
Course in dairying	,,	—	15	51	25	9	50	40	—	—	—
Crop Husbandary and communication	Nilokheri	58	28	14	—	—	—	100	—	—	—
Poultry & Animal Husbandary Management	Anand	20	60	20	—	—	—	100	—	—	—

Table 5 shows that Ludhiana University programmes are farmer oriented. As far as the educational background of the participants is concerned, we find that, 17 per cent are graduates, 43 per cent higher secondary and 40 per cent middle and primary level. The other courses are having more or less the same pattern. The data shows that most of the participants belong to poor and lower middle income families.

The CCE's of NEHU, Waltair, Sagar, Mysore, Kerala and Literacy House Andhra Mahila Sabha, Hyderabad have organised rural community oriented courses. These programmes can be categorised as functional literacy courses for farmers, intended to improve agricultural productivity, development of forests, masonry, and brick making. These programmes are meant for farmers, labourers, slum dwellers and village level workers, generally.

The socio-economic background of participants in different courses are mixed by nature and varies from area to area as can be seen in Table 6.

Table 6

Name of Courses	*University/ Institution*	*Occupational Status (%)*		*Educational Level (%)*			*Economic Status (%)*		
		SSW	*Lab.*	*M*	*P*	*I*	*P*	*LM*	*M*
Masonry and brick-making	Waltair	80	20	10	50	40	100	—	—
Adult Literacy	NEHU	35	65	—	5	95	100	—	—

The above mentioned programmes are organised for semi-skilled workers, farmers and labourers. The level of education of prticipants is of primary level or/and illiteracy and mostly the participants belong to poor families.

The general activities are conducted by Centres for Continuing Education of Waltair, Aligarh, S.N.D.T. (Bombay), NEHU, Kerala, Mysore, Rajasthan and Literacy House Andhra Mahila Sabha Hyderabad in the fields like language, Yoga, Painting, first aid, leprosy, sanitation, hygiene, etc. These courses are meant for labourers, local medical people, unemployed youth, shop-keepers, etc. For example, language and Yoga activities are attended by 10 per cent professional, 30 per cent students, 20 per cent clerical and ship owners, and 10 per cent skilled workers. The level of education of participants varies from illiteracy to post-graduate level.

These programmes have proved quite useful in the development of competence among workers in various fields especially managerial, technical and agricultural fields. The CCE's are playing a useful role as an agent in the formation of human resource development in the country.

Conclusions

The following are the main conclusions :

(i) Majority of the Continuing Education Correspondence/Adult/Non-formal Education Institutions are located in the rim lands of the country and the rest of the regions are neglected. (ii) A large number of Institutions are engaged in the specialised programmes on human resource development, engineering, repairing of machines, agricultural technology and few centres are devoting their energies on general problems of the masses. (iii) Programmes intended to cater to the needs of professionals, semi-professionals and unskilled are neglected. (iv) Courses are channelised to the economically better-off sections of the population and very few are devoted to socially oppressed and economically deprived sections of the society. (v) Most of the activities are meant for educationally highly qualified personnel and very few are organised for literates and semi-literates of the lower strata. Need-based courses should be started in various regions. (vi) Barring agriculture extension a large number of programmes are geared to urban dwellers and rural population is highly ignored. (vii) Programmes of women are oriented to urban house wives and those who want to spend life leisurely, while only a few are suited to the needs of slum dwellers, working women and others.

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Notes from Research

CONSTITUTIONAL SAFE-GUARDS FOR HARIJANS : AN EVALUATION

The Constitution of India which is based upon the basic principle of liberty, equality, fraternity and social justice guarantees special protection to weaker and vulnerable sections of society such as Harijans. Articles 14, 15, 16, 17, 25, 29, 38 and 46, of the Constitution provide various kinds of safeguards to the Harijans. More than a quarter century has passed since the adoption of the Constitution but it is really destressing to note that the condition of Harijans has been deteriorating day by day.

The development of any community depends on its educational attainment because education not only changes the attitudes and value, but also helps in getting important social positions in the social structure. Harijan community in India can be uplifted to a great extent with the help of education of Harijans. It becomes, therefore, necessary to study the benefits derived by Harijan students from various Constitutional and legal safeguards.

The Universe and the Sample

The universe of the present study has been constituted by one thousand one hundred and fifteen Harijan students studying in the Lucknow University in the academic session 1972–73. A sample of 300 Harijan students has been selected from the universe with the help of systematic random sampling method in order to collect the necessary information by interviewing them with the help of an interview schedule.

Summary of Findings

(1) The impact of provisions relating to the abolition of untouchability has been pronounced (vide Table 1).

(2) Most of the respondents have utilised the benefits guaranteed to the Harijans in the Constitution of India in the field of education (vide Table 2).

(3) The main reason for non-utilization of benefits guaranteed under the Constitution has been the lack of implementation of the provisions and facilities guaranteed in the Constitution by the Government. However, quite a sizeable number of respondents could not utilise the benefits either because of their lack of awareness or their apathy and inaction towards the same. (vide Table 3).

Table 1

DIFFERENT PROVISIONS IN THE CONSTITUTION FOR THE UPLIFT OF HARIJANS AND THEIR AWARENESS AND UTILIZATION BY RESPONDENTS OF SUCH PROVISIONS

Constitutional Provisions	*Awareness*			*Utilization*			
	Yes	*No*	*Total*	*Totally*	*Partly*	*Not benefited*	*Total*
Abolition of Untouchability	299	1	300	124	171	5	300
Reservation of seats in Educational Institutions	299	1	300	40	49	211	300
Reservation of seats in services	299	1	300	8	13	279	300
Reservation of seats in Legislature	285	15	300	—	—	300	300

Table 2

AVAILABILITY AND UTILIZATION BY RESPONDENTS OF OTHER BENEFITS AVAILABLE UNDER THE CONSTITUTION

Benefits Available	*Utilization*		
	Yes	*No*	*Total*
Boarding	217	83	300
Economic	—	300	300
Educational	299	1	300
Medical and Recreational	20	280	300
Political	Nil	300	300

(4) The awareness of various provisions of the Constitution and Untouchability Offences Act has been more pronounced as compared to the awareness of Caste Disabilities Removal Act. All those who are aware of the Constitutional provisions have also availed of the benefits provided under the legislative measures. A gap between the awareness and the utilization of benefits is clearly visible (see Table 4).

Table 3

REASONS FOR NON-UTILIZATION BY THE RESPONDENTS OF OTHER BENEFITS AVAILABLE UNDER THE CONSTITUTION

Benefits Available	*Reasons for Non-utilization of Benefits*						
	Un-awareness or No reasons	*Apathy and inaction*	*Refusal on False and Frivolous grounds*	*Unsympathetic attitude of Bureacrats*	*Failure in Examination*	*Facilities merely on paper not in practice*	*Total*
1	2	3	4	5	6	7	8
Boarding	20	26	4	33	—	—	83
Economic	—	20	45	55	—	180	300
Educational	—	—	—	—	1	—	1
Medical and Recreational	—	50	10	30	—	190	280
Political	15	70	20	20	—	175	300

Table 4

AWARENESS AMONG THE RESPONDENTS OF DIFFERENT LEGISLATIVE MEASURES ENACTED FOR PROMOTING AND PROTECTING THE INTEREST OF HARIJANS AND BENEFITS AVAILED OF BY THEM

Different Legislature Measures	*Awareness*			*Benefits Availed of*		
	Yes	*No*	*Total*	*Yes*	*No*	*Total*
Provisions of the Constitution of India	299	1	300	299	1	300
Removal of Untouchability Act	299	1	300	295	5	300
Caste Disabilities Removal Act	175	125	300	140	160	300

●

(5) Most of the respondents have either considered the facilities provided by the Central and State Governments as inadequate or have remained silent on this issue. (vide Table 5).

Table 5

RESPONDENTS OPINION REGARDING VARIOUS FACILITIES FOR THE UPLIFT OF HARIJANS PROVIDED BY THE CENTRAL AND STATE GOVERNMENTS

Facilities	*Extent of Help*							
	Central Government				*State Government*			
	Adequate	*In-adequate*	*No response*	*Total*	*Adequate*	*In-adequate*	*No response*	*Total*
Educational*	20	279	1	300	—	—	300	300
Economic	—	—	300	300	—	—	300	300
Free Meals	—	38	262	300	—	—	300	300
Free Lodging	24	38	238	300	—	131	169	300
Health and Recreation	—	—	300	300	—	20	280	300
Political	—	—	300	300	—	1	299	300

**Educational facilities include Scholarship, Freeship, Book Aid etc.*

(6) A fraction of students have shown satisfaction with the facilities provided by Central Government, particularly with those existing in the field of education and lodging. The remaining number of respondents are either dissatisfied or have given no response. All respondents have remained silent with regard to the facilities by Local Self Government, (vide Table 6).

(7) Compulsory abolition of caste names has been the suggestion given by the largest number of respondents of all educational, income, age and ecological categories. (vide Table 7).

(8). The respondents have more or less unutilised all the facilities except that of reservation of seats in legislatures. Again, the respondents have shown the greater tendency of non-utilization in all the fields, except in those of scholarship and free lodging.

Some suggestions

Twenty per cent seats should be reserved for the admission of Harijans in all educational institutions in all classes.

In all educational institutions facilities for free lodging and boarding should be provided to Harijans and the expenses incurred on these should be deducted from the amount of scholarships given to Harijan students.

Special schools providing for technical training should be established for Harijans in which they should be provided the facilities of free education, free books and free boarding and lodging.

All text books should be made available to the Harijan students. For this, special libraries with the grant from the Government should be established in each and every educational institution. The books should be returned after the examination every year failing which the result should be with-held.

Table 6

EXTENT OF SATISFACTION AMONG THE RESPONDENTS FROM DIFFERENT FACILITIES PROVIDED BY THE CENTRAL, STATE AND LOCAL-SELF GOVERNMENT

Degree of Satisfaction	*Facilities*					
	Educational	*Economic*	*Boarding/ lodging*	*Free Meals*	*Health and Recreation*	*Political*
Central Government						
Satisfied	20	Nil	24	Nil	Nil	Nil
Dis-satisfied	279	Nil	38	38	Nil	Nil
Can't Say	1	300	238	262	300	300
Total	300	300	300	300	300	300
State Government						
Satisfied	Nil	Nil	Nil	Nil	Nil	Nil
Dis-satisfied	Nil	Nil	131	Nil	20	1
Can't Say	300	300	169	300	280	299
Total	300	300	300	300	300	300
Local-Self Government						
Satisfied	Nil	Nil	Nil	Nil	Nil	Nil
Dis-satisfied	Nil	Nil	Nil	Nil	Nil	Nil
Can't Say	300	300	300	300	300	300
Total	300	300	300	300	300	300

Table 7

RESPONDENTS SUGGESTIONS FOR BETTER UTILIZATION OF AVAILABLE FACILITIES

Suggestions given by Respondents	*Yes*	*No*	*Total*
Less stringent conditions attached with different available benefits	275	25	300
Sympathetic attitude of bureaucrats	271	29	300
Timely availability of different facilities	253	47	300
Special information bureaus for Harijans	291	9	300
Special programmes on mass media of communications	290	10	300
Increase in percentage of reserved seats	295	5	300
Compulsory abolition of caste names	297	3	300
Encouragement to inter caste mixing in marriage and dinning through special amenities	285	15	300

Table 8

VARIOUS FACILITIES BEING PROVIDED FOR THE UPLIFT OF HARIJANS AND BENEFITS AVAILED BY THE RESPONDENTS

Facilities	*Incidence of Availing*		
	Yes	*No*	*Total*
Scholarship	299	1	300
Free lodging	179	121	300
Free boarding and lodging	38	262	300
Book Aid	15	285	300
Reserved seats in services	21	279	300
Reserved seats in educational institution	89	211	300
Reserved seats in legislature	Nil	300	300

S.P. Rastogi

PROFESSIONAL TEACHER ATTITUDE OF B.Ed. AND M.Ed. STUDENT-TEACHERS AND ITS CORRELATES

Professional Attitudes, their development, their change from time to time and measurement has been considered important for any professional group, particularly so for teaching since it had always attracted heterogeneous people, its pre-service education and training being one of the shortest among any professional preparation courses. Teaching has been scholarship and service-oriented and proper Teacher Attitudes has always been considered very central to this field. Teaching profession demands a deep and abiding love for scholarship, a readiness to communicate skillfully and a concern for the student-group. Effective teaching requires an experimental outlook towards the educational process and a capacity to effect student-participation in the process of learning. Further as one of the learned professions, teaching requires an attitude of fellowship with one's colleagues because there is so much scope for learning the job from the more competent and from the more experienced. Successful teachers are remembered not only for their capacities but also for their many personal qualities. Any teacher education programme should attempt to build on the part of the teacher-trainees suitable attitude towards the teaching profession. After reviewing certain select researches on professional attitudes of student-teachers a study conducted with a sample of student-teachers of the University of Madras is presented.

The Populations and the Samples

By stratified random sampling, two samples of 546 B.Ed. and 78 M.Ed. students of the University of Madras of 1977-78 were taken for this study, and they constituted 38% and 66% of the B.Ed. and M.Ed. student-populations of that University.

Research Tools

Ahluwalia's Teacher Attitude Inventory was administered at the end of the B.Ed. and M.Ed. courses in the respective Colleges of Education of the University of Madras for the purpose of measuring the Teacher Attitude of these student-teachers.

Dr. B. Kuppuswamy's Socio-economic Status Scale (Urban) was used for determining socio-economic status (SES).

Hypotheses

(1) M.Ed. students would have higher Teacher Attitude than B.Ed students. (2) Student teachers of (a) urban colleges, (b) with post-graduate qualifications, (c) with Science degrees, (d) with higher SES, (e) with teaching experience, (f) with First Class degrees, (g) with Scholarship/Stipend, and (h) women student-teachers would have higher Teacher Attitude when compared to student-teachers of (i) rural colleges, (ii) without post-graduate qualifications, (iii) with Arts degrees, (iv) with lower SES, (v) without teaching experience, (vi) with other lower class degrees, (vii) without Scholarship/Stipend and (viii) men student-teachers respectively. (3) There would be difference between the Teacher Attitude of student-teachers of (a) government and non-government colleges, (b) above 35 and below 35 years of age and (c) independent and dependent status. (4) There would be a positive relationship between Teacher Attitude and the Grade Point Average (GPA) of the B.Ed. students in the University Semester Examinations. Such a relationship would not be there in the case of M.Ed. students. (5) Age and Teaching Experience of B.Ed and M.Ed student-teachers would be having positive relationship with their Teacher Attitude.

Analysis and Interpretation

(1) Ahluwalia's Teacher Attitude Inventory is a five point scale from 0 to 4, having 90 Likert type of items. The maximum raw score was 360 for the scale. Student scores on attitude were converted as percentage scores. Since 50% attitude score marked the point of neutrality of Teacher Attitude, 1.5% of the B.Ed students who had scored lower percentage were considered to have unfavourable Teacher Attitude. None in the M.Ed sample had unfavourable Teacher Attitude. 1.3% of M.Ed. students had neutral Teacher Attitude. Since 51%—75% scores were described as Neutral-Favourable Teacher Attitude, 93% of B.Ed and 94·9% of M.Ed students were placed in that category. Only 76%—100% scores were deemed to be Favourable-Strongly Favourable Teacher Attitude and hence 55% B.Ed and 3·9% M.Ed students were in this range.

(2) Even though the B.Ed students had slightly higher Mean Teacher Attitude (65·16) than the M.Ed students (64·38), yet the critical Ratio being 0·95, the difference between the Means was not significant.

(3) The Teacher Attitude of B.Ed and M.Ed students when analysed led to the following interesting conclusions:

(a) The B.Ed students' o give lay to the right of the M.Ed students' over the entire range almost, but for a small negligible overlap at the right end of the distribution, showing that B.Ed students scored consistently higher than M.Ed students in Teacher Attitude. Differences in Teacher Attitude between the two groups was however small as shown by the distances separating the two curves at various levels.

(b) The M.Ed students' Median was approximately 63 and the B.Ed students' Median was 66 and the line AB shows the difference between the two Medians. The difference between two Q_1's and Q_3's were shown by line CD and EF respectively. It was clear that the groups differed less at Q_1 and Q_3 compared to the Median

(c) The overlap of the two distributions was next studied. 62% of M.Ed students fell below the Median of the B.Ed students, implying that only 38% M.Ed students had better Teacher Attitude than the Median of the B.Ed students. 40% of B.Ed students had scored lower than the Median of the M.Ed student-teachers and 60% of them had higher Teacher Attitude than the Median of the M.Ed student-teachers.

(4) When the chi-square test of independnce of two attributes was applied with reference to the independent variables (two institutional and nine biographical variables) and the Teacher Attitude of B.Ed students, it was found that the following four independent variables had significant relationship with Teacher Attitude to warrant the rejection of the null hypotheses:

(a) Urban/Rural location of the Colleges of Education
(b) Sex of the B.Ed students
(c) Socio-economic Status of the B.Ed students
(d) Teaching Experience of the B.Ed students.

(5) While comparing the variances of the Teacher Attitude of the B.Ed student-groups using F Ratio, the following four findings were established:

(a) The Teacher Attitude of B.Ed students of non-government Colleges had greater variation as compared to the students of the government Colleges of Education (F Ratio=1·43,; df=206, 338; S at ·01 level). Perhaps this was reflecting the two different selection criteria in the government and non-government Colleges of Education. The government Colleges' admission criteria was such that they got a more homogeneous group of students. Among the non-government Colleges, the selection criteria could have been different from institution to institution and this could have contributed to the larger variance in that sub-population of the B Ed students.
(b) B.Ed. students above 35 years of age showed heterogeneity in their Teacher attitude when compared with students below 35 years of age (F Ratio=1·71; df=33, 511; S at ·01 level). The larger variance in the attitude of the older age-group was perhaps due to their larger variability as student-population in general and might reflect their varied experiences as an older group.
(c) B Ed students with independent economic status had larger variance in their Teacher Attitude compared with students who were dependent upon parents/guardians (F Ratio=1·49; df=33, 511; S at ·05 level). The factor of economic independence could have contributed to larger variation in their professional attitude.
(d) B.Ed students with high socio-economic status were found to have significant heterogeneity in their Teacher Attitude compared with students of middle socio-economic status. (F Ratio=1·33; df=115, 255; S at .05 level).

(6) When the differences between the Means of each one of the four pairs of B.Ed. student-teacher—groups having significant difference in their variances in Teacher Attitude was tested for significance as shown in Table 1, the following findings emerged:

(a) As mentioned earlier, B.Ed students of high SES had not only higher variance in their Teacher Attitude compared to students of middle SES, but also had significantly higher average Teacher Attitude.
(b) Though the B.Ed students of non-government Colleges of Education had significantly higher variance in their Teacher Attitude, they did not have yet a higher Mean score compared to B.Ed students of Government Colleges of Education.
(c) Though B.Ed students of above 35 years of age had significantly larger variance in their Teacher Attitude, their Mean Teacher Attitude was not significantly

different from that of the homogeneous group of B.Ed students below 35 years of age.

(d) Though B.Ed students of independent status showed heterogeneity in their Teacher Attitude, yet their Mean Teacher Attitude was not significantly different from that of B.Ed students who were dependent upon their parents or guardians.

Table 1

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS IN TEACHER ATTITUDE OF THE B.ED STUDENT-GROUPS—FISHER BEHREN'S d TEST

S. No.	*B.Ed Student Groups*	*N*	*Mean*	*S.E$_M$*	*tan θ*	*θ*	*d Table Value**	*Critical Value*	*Result*
1.	Government College	339	65·41	0·37					
	Non-government College	207	65·11	0·56	0·6607	33°,30'	1·960	1·3155	NS
2.	Below 35 years of Age	512	65·25	0·31					
	Above 35 years of Age	34	64·03	1·56	0·1987	11°,12'	1·960	3·1174	NS
3.	Independent Status	34	63·74	1·47					
	Dependent Status	512	65·25	0·31	0·2109	11°,54'	1·960	2·9446	NS
4.	High SES students	116	67·05	0·73					
	Middle SES students	256	64·68	0·43	0·5890	30°,30'	1·960	1·6606	S at ·05 level

*5% *level*

(7) When the difference between pairs of B.Ed student-groups was subjected to Critical Ratio test as shown in Table ?, it led to the following four findings:

(a) It was found that B.Ed students of urban colleges had better Teacher Attitude than their counterparts of the rural colleges.

(b) Women students excelled men students in Teacher Attitude.

(c) Students of high socio-economic status had better Attitude than those with low socio-economic status.

(d) B.Ed students with more than 12 years of teaching experience had higher Teacher Attitude compared to those without teaching experience.

(8) While comparing M.Ed student-groups for testing for homogeneity of variances in their Teacher Attitude, the F Ratio was significant in four cases as presented in Table 3.

(a) M.Ed student-teachers of non-government colleges had shown larger variance in their professional Teacher Attitude compared to their colleagues in the government Colleges of Education.

(b) M.Ed student-teachers holding post-graduate degrees had larger variation in their Teacher Attitude when compared with the students not having such post-graduate degrees. Among better qualified people, one could easily expect some to have less favourable why even unfavourable Teacher Attitude and some others might be possessing more favourable Attitude. Morale might be more varied in a better qualified group than less qualified group.

(c) M.Ed student-teachers holding Arts degrees had higher variance in their attitude and tended to be pronouncedly heterogeneous while compared with studets holding Science degrees.

(d) M.Ed student-teachers with high SES had shown larger variance in their Teacher Attitude compared with students of low SES.

Table 2

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS IN TEACHER ATTITUDE OF B.Ed STUDENT-GROUPS USING CRITICAL RATIO TEST

S.No.	*The Groups compared*	*N*	*Mean*	*$S.E_M$*	*C.R*	*Result*
1. a	Students of urban colleges	440	65·48	0·33		
b	Students of rural colleges	106	63·14	0·72	2·96	S at ·01 level
2. a	Men students	224	63·09	0·46		
b	Women students	322	66·59	0·39	5·83	S at ·01 level
3. a	Students of high SES	116	67·05	0·73		
b	Students of low SES	174	64·58	0·54	2·71	S at ·01 level
4. a	With more than 12 years of teaching experience	21	65·81	0·36		
b	With no teaching experience	407	64·89	0·35	1·84	S at ·05 level

Table 3

TESTING FOR HOMOGENEITY OF VARIANCES OF THE M.Ed STUDENT-GROUPS IN THIER TEACHER ATTITUDE USING F RATIO

S.No.	*The Groups compared*	*N*	*SD*	*SD^2*	*F_e**	*F Ratio*	*Level of Significance*
1. a	Students of government colleges	41	5·61	31·47	1·71		
b	Students of non-government colleges	37	7·78	60·53	2·15	1·93	0·05
2. a	Students who were graduates	46	4·94	24·40	1·71		
b	Students who were post-graduates	32	18·73	350·81	2·14	14·52	0·01
3. a	Science degree holders	47	3·24	10·50	1·71		
b	Arts degree holders	31	20·42	416·98	2·13	40·16	0·01
4. a	Students with high SES	50	6·66	44·36	1·80		
b	Students with low SES	20	4·85	23·52	2·27	1·83	0·05

**While denoting Fe values, 5% was shown above 1% level was shown below.*

Table 4

TESTING THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN MEANS IN TEACHER ATTITUDE OF THE M.Ed STUDENT-GROUPS-FISHER BEHREN'S D TEST

S. No.	*M.Ed. student Groups*	*N*	*Mean*	$S.E._M$	*tan θ*	*θ*	*d Table value*	*Critical value*	*Result*
1.	Government College	41	62·90	1·28					
	Non-government College	37	66·08	1·28	1·00	45°,0’	1·960	3·548	NS
2.	Graduates	46	65·02	0·73					
	Post-graduates	32	63·34	3·31	0·2205	12°,24’	1·960	6·643	NS
3.	Science degree holders	47	64·64	0·47					
	Art degree holders	31	60·32	3·67	0·1281	7°,18’	1·960	7·252	NS
4.	High SES students	50	64·38	0·94					
	Low SES students	8	59·88	1·83	0·5137	27°,12’	2·215	4·557	NS

(9) When the four pairs of M.Ed student-groups that had significant difference in their variances in Teacher Attitude were tested for significance for the difference between the Means as presented in Table 4, it led to the following findings:

(a) Though M.Ed students of non-government colleges had heterogeneity in their Teacher Attitude compared to the homogeneous students of government colleges, yet there was no significant difference between the two Means of Teacher Attitude.

(b) Though the postgraduates among the M.Ed students had significantly larger variation in their Teacher Attitude compared to the graduates, yet there was no significant difference between the two Means of Teacher Attitude.

(c) Similarly the Arts degree-holders had significantly larger dispersion in their Teacher Attitude compared to Science degree-holders among the M.Ed students, yet the difference between the two Means of Teacher Attitude was not significant.

(d) Finally students with high SES showed significantly lack of homogeneity in their Teacher Attitude while compared with students of middle SES, and yet the difference between the Means of the two student-groups lacked statistical significance.

(10) When the difference between the Means of pairs of student-groups having homogeneity in Teacher Attitude was tested for significance, it was found that M.Ed students with middle SES had higher Attitude (65·50) than those of low SES (59·88) and the difference was significant at ·01 level as the Critical Ratio was 2·27.

(11) Correlates of Teacher Attitude of Student-Teachers:

The Grade Point Average in the University Semester Examinations in the Theory Papers of the B.Ed and M.Ed student-teachers, their age and their Teaching Experience prior to entry in the College of Education were the three variables considered for the purpose of examining the relationship between each one of them and Teacher Attitude. There was a significant and positive correlation between GPA and Teacher Attitude of B.Ed students ($r=0·11$; $df=544$; $P<·05$). Teacher Attitude of B.Ed students had no significant correlation with their Age ($r=—0·05$; $df=544$;NS). Among 546 B.Ed students in the sample, 139 of them had teaching experience. Their Teacher Attitude had no significant relationship with their Teaching Experience (r=—0·114; df=137; NS). Teacher Attitude of M.Ed students had no significant correlation with their GPA (r+·12; df=76; NS) and age (r=·05; df=76 NS). 61 M.Ed students in the sample had teaching experience and there was no significant correlation between their Teacher Attitude and Teaching Experience (r+-·04; df+60; NS).

Conclusion

(1) The Colleges of Education in the University of Madras had been quite successful in building favourable Teacher Attitude on the part of B.Ed and M.Ed student-teachers. In this study, Attitude was measured only at the end of the B.Ed and M.Ed courses. It would have been more illuminating if Teacher Attitude had been measured at entry and exit points of these courses.

(2) Though there was no significant difference between the Mean Teacher Attitude of B.Ed and M.Ed students, yet there were distinct differences in the pattern of the frequency distribution of the attitude scores.

(3) (a) Among the B.Ed student-teachers, those belonging to non-government Colleges of Education had significantly larger variance than their counterparts of the government Colleges in Teacher Attitude even though there was no significant difference in their Mean Attitude.

(b) Similarly those above 35 years of age had larger variance than those below that age.

(c) Those of independent status had larger variance in attitude compared to those with dependent status.

(d) B.Ed student-teachers with high SES had not only larger variance, than those of middle SES, but also had significantly higher Mean attitude.

(e) Student-teachers of urban colleges had higher attitude than those of rural colleges.

(f) Women excelled men in attitude. In all service-oriented professions and in jobs requiring dealing with children and young people dominantly women might be expected to show more suitable attitude.

(g) Those of High SES had better attitude compared to those of low SES.

(h) Those with more than 12 years of teaching experience had significantly higher attitude than those without such experience.

(i) The two independent variables namely the possession of a I Class/other class degree and the financial assistance for studies—either received or not received did not have any effect on the attitude of B.Ed students.

(4) (a) Among the M.Ed student-teachers, those belonging to non-government Colleges had significantly larger variance in Attitude compared to those of government colleges.

(b) The post-graduates had higher variance in attitude than the graduates.

(c) The Arts degree-holders showed larger variance in their attitude than the Science degree-holders.

(d) Those with high SES had definitely larger variance compared to their colleagues of low SES.

(e) Students of middle SES had significantly higher Teacher Attitude compared to those of low SES.

(f) Five independent variables namely Sex, Age, Independent/Dependent status, Teaching Experience and Financial assistance Received/Not Received did not have any influence on Teacher Attitude of M.Ed student-teachers.

(5) (a) Teacher Attitude of B.Ed student-teachers had significant and positive inter-correlation with their GPA and did not have significant inter-correlation with their Age and Teaching Experience.

(b) Teacher attitude of M.Ed student-teachers had no significant intercorrelation with their GPA, Age and Teaching Experience.

M. Raghuram Singh

COMMUNICATION IN RAGGING

Ragging is a British legacy which some academic institutions in India have inherited and are perpetuating it. The definitions of ragging, "to rate: to banter: to assail or beset with questions"[1] "to torment or tease or an outbreak of boisterous merry making"[2] have little relevance to the grim stories of "ragging", which alone find expression in the Press. These have given ill-fame to "ragging".

Little effort seems to have been made to study or understand it as a type of communication. The Indian Institute of Technology, Bombay, (IIT) provided an opportunity to get some first hand information and views on ragging from the students themselves. Information was collected informally from students for three years, during ragging "seasons"; some case histories of ragging incidents were also collected. On the basis of this information a formal empirical study was undertaken in July-August 1978. The findings of the study are presented here.

Ragging as Communication

As the title suggests, the present study is not a survey of ragging at IIT, but an attempt to understand it as a type of communication. Communication, in the sense of transmission of a message assumes that the Communicator feels a *need* to convey a message to some one. In the normal process of communication the receiver or the 'destination' receives and interpretes the message. There can be a 'distortion' in the message if the environment of communication in the sense of knowledge and experience of the receiver in the particular context, is different from that of the communicator. In a communication process the receiver may not feel the need to receive the message and he may 'ignore' it. This entire base of communication is evident in ragging also.

In the context of ragging the process of communication takes place in a set of special circumstances.: It is communication between strangers. but strangers who thenceforth are destined to live together for a few years in close contact in the same hostel, perhaps in the same wing of the hostel. Secondly, due to inadequate or distorted knowledge, the receiver in most of the cases, to say the lease, is apprehensive of the communication[3]; most often he is reluctant to receive it. His apprehension is heightened by the fact that in the majority of the cases the student-receiver is for the first time left all alone, away from the protective custody of the parents. Moreover, passing the Joint Entrance Examination, has given him a sense of achievement and superiority, of which the communicator is strongly aware and has experienced it himself. On the other hand, the communicator, for more than one reason, is keen to "communicate". He has himself undergone the process of ragging and feels he should also rag. It is not suggested that all ragging is retaliatory; most often it is not[4]. Under the circumstances ragging often becomes a *forced* communication for the receiver. However, whenever the communicator and the receiver have a proper approach to ragging it results in voluntary communication[5].

Ragging takes different forms. Its broad categories as identified by the students, are (a) verbal or mental, and (b) physical or sadistic. To some all ragging is mental; to a few all ragging is sadistic. However, an overwhelming majority of the students distinguish between these two categories. Physical ragging is submitting the new entrants to physical hardship, ranging from milder to severe forms. These provide sadistic pleasure to the persons who rags this way. *It has no communication value.*

It is the verbal or the mental ragging which seems to have a message to convey and will be considered from that point of view. Mental ragging is also a very nebulous category. which ranges from simple questioning of the fresher's[6] background, interests etc. to very intimidating questions on knowledge in Physics, Chemistry, Mathematics, on sex (most often) on ideals and values, or simultaneous questioning by a number of seniors on everything/anything under the sun. It also includes making the fresher sing songs, mimic, tell stories, jokes, give speeches, dance, say bad/silly words, read porno aloud and so on. Mental ragging sometimes ends in or is splashed here and there with physical ragging, such as, make the fresher sit on a cupboard or a partition, or play "nose-hockey". If a fresher breaks down, he is allowed to go. A "tough guy" with an inflated ego is ragged the most. A smart guy, talented and knowledgeable, is the best receiver.

The Problem

To ascertain the communication value in ragging, two questions need to be answered. First, is there a "message" in ragging, and second, is the communicator successful in communicating his message to the destination? The present study attempts to answer these questions.

The Methodology

Out of nine men's hostels on the campus, each housing about two hundred and fifty students, six hostels were included in the present study. Of those which were excluded, one hostel has not taken freshers regularly every year and the other two mostly house post-graduate students[7]. Twenty per cent stratified random sample was selected from the six hostels. Out of a sample of fifty from each hostel, fifteen were freshers, fifteen second year students (who were ragged only the previous year and had their first opportunity at ragging), and twenty students were studying in third to fifth years. Soon after the "Freshers' Night," indicating the end of the ragging season, questionnaires were distributed one night in all the hostels simultaneously by volunteers from amongst the hostelites. Volunteers were instructed not to 'choose' the respondents but to randomly distribute the questionnaires in all the wings of their respective hostels. The completed forms were collected by the volunteers the same night or the next morning. The total number of filled-in questionnaires received from the six hostels was 268, (1st year: 83; 2nd year; 60; 3-5 years: 125). The lesser response from the 2nd yearites was from two hostels, where the volunteers were unable to retrieve the filled-in questionnaires, distributed earlier. The contents of the questionnaires were slightly different for the freshers and the seniors. The differences are indicated wherever necessary. Anonymity of the respondent was maintained as neither his name nor role number appeared on the questionnaire.

Social Background

Out of one hundred and eighty-five respondents (2nd to 5th year) fifteen have not ragged any time (8 from the 2nd year and 7 from the rest) and nine have not responded to the questions related to their own participation in ragging. The rest 87 per cent of respondents of the communicator category have ragged freshers sometime during their stay at IIT. Ninety-two per cent of the communicators were ragged when they were freshers. Out of the 83 freshers, only one was not ragged. It must be pointed out that thirty-four seniors (18.3 per cent) had not ragged that year. Therefore, when the two groups are described as communicators and receivers, it is only as categories. The communicators and the receivers in this sample were not necessarily in direct communication with one another.

The social characteristics considered relevant in the context of ragging are mother tongue (ethnic background) urbanity, medium of instruction, and type of school, in which the respondent studied (Table 1). Both the groups are similar on all the variables. A comparison of raggers and non-raggers among the communicators also showed no specific characteristics predominant in either group. Ragging, therefore, is only on senior-fresher relationship.

The Message

Different types of ragging, commonly indulged in at IIT, were listed in the questionnaires for the two groups, and the respondents were asked to give frequency of the type/s they had undergone. Table 2 gives the frequency as slightly re-grouped and rearranged. The data indicate that the highest proportion of ragging has been of the verbal type: questioning on sex, simultaneous questioning, and talent search. Next, in terms of frequency,

Table 1

SOCIAL BACKGROUND OF THE RESPONDENTS

Characteristic	*Communicators* 185 *cases* (2*nd*-5*th year*)	*Receivers* 83 *cases* (1*st year*)
1. *Mother-tongue*		
Marathi	77 (41·62)	37 (44·58)
English	5 (2·70)	6 (7·23)
N. Indian group of languages	53 (28·65)	23 (27·71)
Dravidian group of languages	26 (14·05)	16 (20·28)
Others	12 (6·49)	—
No response	12 (6·49)	1 (1·20)
2. *Medium of Instruction at School*		
English	122 (65·95)	57 (68·67)
Marathi	38 (20·54)	17 (20·48)
N. Indian group of languages	12 (6·49)	6 (7·23)
Dravidian group of languages	3 (1·62)	2 (2·41)
Others	4 (2·16)	—
No response	6 (3·24)	1 (1·20)
3. *Type of School*		
Convent	52 (28·11)	21 (25·30)
Private	82 (44·32)	36 (43·37)
Others	47 (25·40)	24 (28·91)
No response	4 (2·16)	2 (2·41)
4. *Urbanity*		
Rural	15 (8·11)	5 (6·02)
Small town	37 (20·00)	16 (19·28)
City	126 (68·11)	56 (67·47)
No response	7 (3·78)	6 (7·23)

rank the type which are of the nature of bossing: running errands, mild humiliation and some work. The least frequent are the sadistic. It may also be pointed out that the frequency in all types of ragging is commonly less than ten times, and even within this frequency–category most often it has been less than three times.

The fresher seems to have been ragged more than the senior, especially in bossing and sadistic type. This can be interpreted in two ways. It may be that this batch was ragged more than the earlier batches; or that their experience was fresher for recall than for the seniors. This point will be taken up later.

The Need for Ragging

The most crucial question is why do seniors rag? Do they feel a social or psychological need, or is there some kind of external compulsion? The information was sought from the seniors with the help of a list of nine need items. The respondents were asked to indicate the needs which, in their opinion, are felt by the students who rag. The responses are given

Table 2

TYPES OF RAGGING UNDERGONE

Frequency of ragging undergone	*I Introductory (Verbal)*				
	Talent search	*Questions on self/family*	*Questions on sex*	*Questions on religion*	*Simultaneous questioning*
Ist year: 83 cases					
Not ragged**	6 (7·23)	10 (12·05)	4 (4·82)	50 (60·24)	14 (16·87)
Ragged 1-10 times	65 (78·31)	45 (54·21)	50 (60·24)	26 (31·32)	52 (62·65)
Ragged 11-20 times	2 (2·41)	10 (12·05)	8 (9·64)	2 (2·41)	4 (4·82)
Ragged more than 20 times	5 (6·02)	12 (14·46)	15 (18·07)	4 (4·82)	8 (9·64)
Ragged but no. of times not specified	5 (6·02)	6 (7·23)	6 (7·23)	1 (1·20)	5 (6·02)
IInd to Vth year: 185 cases					
Not ragged**	39 (21·08)	48 (25·95)	39 (21·08)	121(65·40)	56 (30·27)
Ragged 1-10 times	106 (57·30)	93 (50·27)	88 (47·57)	56 (30·27)	89 (48·11)
Ragged 11-20 times	10 (5·40)	14 (7·57)	19 (10·27)	2 (1·08)	10 (5·40)
Ragged more than 20 times	6 (3·24)	10 (5·40)	12 (6·49)	—	7 (3·78)
Ragged but no. of times not specified	24 (12·97)	20 (10·80)	27 (14·59)	6 (3·24)	23 (12·43)

Figures in the brackets are percentages.

in Table 3 in a re-arranged form. Seventy-five per cent respondents consider ragging as fulfilling the need for quick introduction to the fresher, and the second-highest response is to finding talent for the hostel/Institute (67.6 per cent). The two needs are consistent with the frequency pattern of the types of ragging discussed above. Items related to the socialization of the fresher (3,4,5) rank next (44·3, 44·3, 48·1 per cent) followed by item 6, which

BY THE RESPONDENTS AND THEIR FREQUENCY

II Bossing				*III Sadistic*	
Running errands	*Humiliation (mild)*	*Menial jobs*	*Some work*	*Humiliation (severe)*	*Physical hardship (torture)*
34 (40·96)	22 (26·51)	42 (50·60)	44 (53·01)	57 (68·67)	60 (72·20)
42 (50·60)	50 (60·24)	40 (48·19)	34 (40·96)	23 (27·71)	20 (24·10)
—	2 (2·41)	—	—	—	2 (2·41)
6 (7·23)	6 (7·23)	—	1 (1·20)	2 (2·41)	—
1 (1·20)	3 (3·61)	1 (1·20)	4 (4·82)	1 (1·20)	1 (1·20)
91 (49·19)	76 (41·08)	143 (77·30)	124 (67·02)	151 (81·62)	137 (74·05)
78 (42·16)	84 (45·40)	38 (20·54)	54 (29·19)	32 (17·30)	47 (25·40)
4 (2·16)	6 (3·24)	—	—	—	—
4 (2·16)	5 (2·70)	—	—	—	—
8 (4·32)	14 (7·57)	4 (2·16)	7 (3·78)	2 (1·08)	1 (0·54)

The three categories, introductory, bossing, sadistic, were not identified in the questionnaire.
***One in the 1st year and 15 in the II-V year who were not ragged at all are included.*

indicates the need for entertainment (37·8 per cent). The need for socialization is also supported by the fact that "tough guys who act smart" are ragged more often. Items 7, 8, 9 which refer to sadistic needs of varying degrees are the lowest in preference (22·2, 17·3 and 14·1 per cent).

Table 3

NEED FELT BY THE RAGGERS: OPINION OF THE SENIORS

185 cases *The Need*	*The number of seniors who said "Yes" to the need*
1. It helps coming closer to the fresher more quickly	139 (75·13)
2. It helps find talent for the hostel/Institute	125 (67·57)
3. It makes the new entrant smart	82 (44·32)
4. It helps the new entrant know about IIT	82 (44·32)
5. It helps the fresher lose his pride	89 (48·11)
6. It serves as a pastime to seniors, who have nothing to do at the beginning of the year	70 (37·84)
7. It is fun to embarass the fresher	41 (22·16)
8. It is fun to frighten the fresher	32 (17·30)
9. It gives the seniors satisfaction: "I am superior"	26 (14·05)

Table 4 presents ranks given to these needs by the respondents. Unfortunately very few respondents ranked the needs and most of them gave only one, two or three ranks. Therefore, out of the ranking given by 132 respondents, the actual rankings available for comparison are very few, and inadequate for the purpose of scaling. Fifty-three per cent of the 132 respondents have given first rank to the need for quick introduction. No other need receives the 1st rank from even 10 per cent of the 132 respondents. Moreover, out of 99 respondents, who have ranked the need for introduction, 70·71 per cent have given it the first rank. Talent search gets second and third ranks; socialization of the fresher is also ranked second and third. Compared to these three needs a small number respondents have ranked the need for pastime at all four levels; there is no preference at any rank.

Table 4 also presents the data on how the fresher perceives the need felt by the seniors. This information was collected through an *open-ended* question. It is interesting to note that the needs predicted come very close to the categories provided to the seniors. However, there is a clear difference in their perception of the priorities of the seniors' needs. Almost equal number of respondents (50, 46, respectively) consider quick introduction and entertainment as needs felt by the seniors. Almost half of the respondents who have ranked introduction give it a second rank. The rest have ranked it either first or third. Out of 66 respondents who have identified the first rank, 40 per cent have given it to entertainment, while only 22·72 per cent have given it to introduction. The need to make the new entrant smart is not perceived at all. On the other hand, the freshers identify three needs which seniors have not considered. All are psychological, namely, the need for the senior to feel superior, to retaliate, and to seek sadistic pleasure[8]. Two-thirds of those who have ranked sadistic pleasure, have given it fourth rank. The needs, to feel superior and to retaliate are divided in first three ranks.

Effect of Ragging

Opinions on and attitudes to ragging were sought from the two groups. Table 5 presents the data. An overwhelming majority, 80·54 per cent seniors and 78·31 per cent

Table 4

RANK ORDER OF THE NEEDS FELT FOR RAGGING

Rank order	The needs*										
	1	2	3	4	5	6	7	8	9	10	Row Total
185 Cases (2nd to 5th year)											
1	70	10	6	7	10	11	9	—	—	—	132
2	16	33	17	8	11	7	10	—	—	—	105
3	9	20	16	15	18	9	3	—	—	—	92
4	4	6	7	11	11	7	4	—	—	—	51
Column Total	99	69	46	41	50	34	26	—	—	—	380
83 Cases (1st year)											
1	15	1	—	4	3	26	3	9	—	5	66
2	24	3	—	2	—	16	1	5	1	5	57
3	11	3	—	2	—	2	2	7	2	6	35
4	—	—	—	1	2	2	—	—	6	—	11
Column Total	50	7	—	9	5	46	6	21	9	16	169

*1. *It helps coming closer to the fresher more quickly.*
2. *It helps find talent for the hostel Institute.*
3. *It makes the new entrant smart.*
4. *It helps the new entrant know about IIT.*
5. *It helps the fresher lose his pride.*
6. *It serves as a pastime to seniors, who have nothing to do at the begining of the year.*
7. *It is fun to embarass/frighten the fresher.*
8. *It gives the seniors satisfaction: "I am superior".*
9. *It gives sadistic pleasure to the senior.*
10. *Seniors themselves were ragged.*

Table 5

OPINION ON AND ATTITUDE TO RAGGING

Nature of opinion	*Response*	
	2nd to 5th year (185 *cases*)	*1st year* (83 *cases*)
Ragging is bad	18 (9·73)	10 (12·05)
Ragging is harmful	3 (1·62)	1 (1·20)
Ragging is bad and harmful	4 (2·16)	4 (4·82)
Ragging is fun	16 (8·65)	10 (12·05)
Ragging is useful	45 (24·32)	23 (27·71)
Ragging is fun and useful	88 (47·57)	32 (38·55)
No response	11 (5·94)	3 (3·61)

Attitude	*Response*	
	2nd to 5th year (185 *cases*)	*1st year* (83 *cases*)
Ragging should be prohibited	12 (6·49)	6 (7·23)
Ragging should be moderate	53 (28·65)	22 (26·51)
Ragging should be mild and moderate	80 (43·24)	50 (60·24)
Ragging should be encouraged	25 (13·51)	2 (2·41)
No response	15 (8·11)	3 (3·61)

freshers consider ragging fun and or useful. Similarly, 71.8 per cent seniors and 86·75 per cent freshers feel that ragging should be mild and moderate. Opinions and attitudes were found to be not related to type or frequency of ragging undergone.

Interpretation of the Data

Is there a 'message' in ragging? Is the communicator successful in communicating his message? As mentioned earlier, these are the two crucial questions to be answered if ragging is to be considered as communication. Positive answer to the first will indicate that ragging has communication value, and to the second will indicate that the communication is effective.

The message in ragging is what ragging is intended to convey and what it conveys. The different types of ragging can be identified under three categories: *introductory, bossing* and *sadistic* (Table 2). As stated earlier, sadistic is not communicative. The data show that this type is least indulged in and is least favoured. The bossing type of ragging can be interpreted as the senior informing the fresher that he is the "boss" around. He also seems to tell the fresher "I am more mature. I know better; you can learn something from me". The fresher interpretes it as expression of a feeling of superiority. However, bossing can also have sadistic intentions and, therefore, its message depends on the purpose of the ragger.

Introductory types of ragging are the most communicative. The above data show that these are the most common and most favoured. They are verbal. Through questioning and asking the fresher to do a number of things the senior seeks information and incidentally also gives some. Talking on most intimate personal subject like sex he becomes informal with the fresher. Most of ragging is a group phenomenon. If the group of seniors, who are themselves intimate friends, do not find the fresher interesting they leave him and do not rag him again. They select boys, who look smart, and continue to rag if they are intelligent, knowledgeable and talented. 62·11 per cent of the boys in this study have said that they prefer to rag boys who are easier to communicate or have similar background as theirs. Such boys also enjoy repeated raggings of this kind. Inspite of the initial apprehension, it seems that, the fresher appreciates the introductory communication, and even considers it useful. However, he looks upon it *mainly* as entertainment for the seniors, and secondarily as introduction.

It must be noted here that both the seniors and the freshers belong to similar background. Seniors have also undergone similar types of ragging. Common social background and experience (ragging) give a common environment for effective communication.

To consider the effectiveness of communication we should also look at the purpose of the communication as seen by the two groups in terms of the needs. A major difference between the two groups is that the seniors primarily express social needs, while freshers view them as psychological needs for the seniors. However, common meeting ground is where both see it as helping quick introduction; both give it the highest frequency, although seniors give it first rank, the freshers split it between first, second and third. It is significant to note that the freshers were given an open ended question. In their opinion and attitude also both the groups agree in considering it useful and fun, and that it should be mild and moderate, meaning the "introductory type" in our typology.

The present study, therefore, supports the contention that ragging has communication value. And the communication is generally effective. Before concluding this paper, some aspects which have not been considered above need to be emphasised. Firstly, although in order to understand communication in ragging we have highlighted the "need" aspect, it is more a fever, a tradition which gives incentive to ragging season. The study reveals that it is a group phenomenon and most of the respondents join groups rather than initiate themselves.

Secondly, the respondents who have given opinion against ragging are generally also of the opinion that there are other more "decent" ways of introduction, which cannot be denied. When this opinion was posed to some students it was pointed out that in the absence of proper ragging, hostel pride does not develop; students tend to group on year and department basis; and that ragging creates greater intimacy faster. If this is true, the seniors who feel ragging has certain advantages, also must bear the responsibility to avoid sadistic ragging. They are in a better position to do so than any institutional authority. They are likely to know the sadistic raggers; they can keep vigilance and protect the fresher from such suffering.

Lastly, however useful introductory ragging may be, sadistic cannot be condoned. If it has no message for the fresher, it has a message for us, the educationists and the social scientists: sadistic ragging reflects "sickness" in society. If, as the present data indicate, sadistic ragging has been undergone by so many students it means that it is a serious problem. One cannot sit back and forget it. The causes of such psychopathic pleasure in young intelligent boys need further investigation.

A Word of Caution

This is a *single emprical* study of ragging in *one* institution. Its findings should not be generalized or applied to other institutions, where ragging takes place. Nor should this exercise be construed as an encouragement to ragging.

My curiosity was aroused by the fact that if ragging is bad and harmful why good, intelligent and mature students at IIT would also rag? The answer is that it is not always all that bad!

Students' activities should be looked at more closely in order to understand their involvement.

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1. *Chamber's Twentieth Century Dictionary,* 1952. p. 910.
2. *Webster's Seventh New Collegiate Dictionary,* 1965, p. 706.
3. In the present study, 46·27 per cent of the total respondents had no knowledge of ragging at IIT, while 18·66 per cent had adequate knowledge. 13·66 per cent of the respondents had undergone ragging prior to joining IIT.
4. It has also been checked by Cross-tabulating nature of ragging a respondent has undergone and his participation in ragging, need felt, and opinion. These show no relationship.
5. This has been conveyed by some respondents in the present study.
6. In IIT the new comer first yearite is a "fresher" or "freshy".

7. Hostel 10, which is ladies' hostel was initially included in the study. However, since the hostel is occupied predominantly by post-graduate students, most of the respondents had neither themselves gone through ragging nor had ragged. Hence, the hostel was dropped from the study later.
8. If ragging were retaliatory on a large scale, 2nd yearites would have ragged more and more vigorously than the other seniors. Comparison does not show such difference. Out of 15 non-raggers 8 are 2nd yearites. So also in type of ragging 2nd yearites were not more severe raggers.
9. This has also been expressed by many respondents.

Vijaya B. Punekar

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Book Reviews

Systems of Higher Education: International Council for Educational Development, 1978.

The phenomenal expansion of higher education throughout the world since the Second World War has not been entirely a success story. On the contrary, operating in a relatively unique socio-economic and cultural millieu, higher education in every country seems to have a trail of problems with accompanying stresses and strains. The International Council for Educational Development, which had watched the situation for some years, embarked in 1975 upon a three-year comparative analysis of the design, management, and effectiveness of systems of higher education in twelve countries. The series under review is the outcome of this study, which was generously funded by the Krupp Foundation of the Federal Republic of Germany.

The twelve countries selected include Australia, Canada, the Federal Republic of Germany, France, Iran, Japan, Mexico, Poland, Sweden, Thailand, the United Kingdom, and the United States of America. The directors of country studies came from varied backgrounds like education, economics, medicine, philosophy, and sociology. Some of them were involved in administrative positions in the educational systems of their countries. In addition to a general description, each of the directors was asked to evaluate the strengths and weaknesses of their systems of higher education. The general guidelines provided to the directors of country studies carried an admonition that they were not to be followed inflexibily, so that the latitude needed to explain the context, development and features of the respective systems was available. This study differs from many preceding efforts at drawing international comparisons in that it goes beyond quantifiable facts and utilizes the qualitative judgments of the people who are actually involved in the field of higher education.

In its entirety, the study consists of fourteen volumes. There are twelve volumes, one for each country report. There is one volume, which is based on the twelve country reports. Crossing the national boundaries, it provides a comparative analysis of some of the most important issues confronting all the nations, namely, planning, administration and management; coordination; effectiveness of the system in meeting its social purposes; the effectiveness of the system to change and adjust; and the efficiency of the system. And finally there is a concluding report.

As regards the significance of the study, James Perkins and Nell Eurich claim :

> On a broad scale this study offers a statement about how different countries are dealing with critical problems of educational planning and operations. It speaks to social scientists and public officials who are necessarily concerned with

> problems of social unrest and cohesion as well as finance and changing priorities. It further holds the prospect of learning from the experience of others. Most educational systems have imported ideas from abroad, or at least they have been stimulated frequently by others to think creatively about their own systems. Also the study provides the means to learn of others' successes as well as difficulties. Finally, there is the responsibility of discovering some general rules of governance that should be studied carefully by all those concerned with macro-planning of higher education.

In the United States of America (Alan Pifer, John Shea, David Henry and Lyman Glenny), the major issues of current concern in higher education are those of access, the needs of youth, the preservation of elitism and institutional autonomy. The Americans seem to be operating with two quite different, and apparently inherently contradictory, concepts of higher education. On the one hand, it is viewed essentially as 'a social service, an activity, that should be pragmatically and fluidly related to the ever-changing needs of the society, available to all and closely responsive to the popular will'. On the other hand, it is also viewed 'as something that should be independent of society, self-directed, slow to respond to the fashions and currents of the day, housed in a set of unique, selective institutions whose sole purpose is to foster the highest levels of intellectual development and achievement'. Obviously, this situation breeds and fosters tensions not only within the system of higher education as such, but also within individual institutions. It is important to note that there is no formal structure at the federal level for planning, evaluation, finance, policy formulation or administration.

The German system of higher education (Hansgert Peisert and Gerthild Framhein) is said to be in a phase of reconstruction involving the making of essential changes in content and form of education on the one hand, and in management structures on the other. This phase of reconstruction has to be understood in the background of the transition from the totalitarian centralist cultural administration of the Third Reich, following the Second World War, to the 'cultural-federalistic' authority of the Lander (constituent unit State) established under the Federal Republic. The transition from an elitist to an open system of higher education is an important facet of this phase. With over one-fourth of the college-age youth being served, it has necessitated a complex planning system. Since 1945, nation-wide central committees have been established in the decentralized system of higher education and over a period of time the functions of these committees have changed 'from reactive coordination to planning and decision-making'.

In France (Alain Bienayme) universities are serving, so to say, an 'apprenticeship in autonomy' which was conferred on them in 1968. While opportunity was provided for the universities to undertake self-transformation, they were also supposed to pursue their traditional role. Autonomy implies some amount of lack of uniformity. Thus, the institutions of higher learning in France form a disparate group, varying in terms of the ministries to which they are responsible, the process for certification, funding, and power structure. The impression which emerges is that the French universities are extremely vulnerable. While, ideological tensions have no doubt become more relaxed, the consensus that is apparent is equally fragile. The critical problems that the universities are confronted with seem to deny the basic confidence which is crucial to their functioning.

The report on United Kingdom (Tony Becher, Jack Embling and Maurice Kogan) covers the English, Welsh, Scottish, and Northern Irish institutions. It deals with the nature and scope of the major institutions of higher education relevant in Britain, the way higher education is financed and the relationships between the institutions and public authorities. Its salient features include the analysis of the binary system, and exposing the difficulties in justifying the differences in structure between the 'private' and 'public' sectors in terms of extent functions. It discusses the roles of 'the main central, intermediary, and local authorities and the part played by the interest groups'. It shows how the individual department or course is the important unit in the formulation of educational policy. It also examines the responsiveness of the system of higher education to the need for change, and it appraises the balances between quantity and quality. The experience of changes in size, scope and strucure since the sixties has posed a test for the effective of the British system, which has far too long been taken for granted.

The case of Canada (Edward Sheffield, Duncan Campbell, Jeffery Holmes, B.B. Kymlicka, and James Whitelaw) is unique. As a land of regional and linguistic a diversity, Canada is characterized by a diversity of systems of higher education. The report accordingly contains details for four of the ten regions, namely, the Atlantic Provinces, Quebec, Ontario, and Western Canada, and an outline on the national scene. Thus, the situation of regional responsibility for education coupled with federal concern with consolidation, provides insights to anyone interested in the analysis of unity in diversity and the problem which it entails.

As regards Australia (Bruce Williams), the tertiary education consists of three sectors, namely, the universities, the college of advanced education, and the colleges of technical and further education. The arrangements are 'complex, rich in paradox, and structurally unstable'. A major factor in this complexity and institutional instability is the division of powers between the Commonwealth government and the states. The mismatch between the financial and legislative powers of the Commonwealth and the states has no doubt been reduced over a period of time, but the states are as yet faced with the task of balancing between 'more even funding arrangements' and the 'distinctive state policies'.

The report on Japan (Katsuya Narita) focusses on how rigidly self-contained institutions of higher education pose difficulties in formulating system-wide planning. With a coverage of about forty per cent of the college-age youth in a variety of instructional arrangements, and with about three-fourths of the institutions being in the private sector, it is not surprising that higher education has become a focal issue in Japan. 'The high cost of limited educational resources ; the feasibility of nationwide planning and implementation of a national policy without infringing on academic freedom ; and the effectiveness of education to meet student needs and social demands', are the specific educational issues currently confronting higher education in Japan.

The report on Poland (Jan Szczepanski), by far the best of the country reports, is the only one representative of the system of higher education in Eastern Europe. Higher education in Poland is an integral part of the state school system. Equality of opportunity for admission with emphasis on redressal of social inequality, an educational planning based on a consideration of manpower needs and an orientation to Marxian socialist ideology in the content and spirit of education constitute some of the principles of the Polish model of education. As regards the chief problems confronting the system, adjustment to reorganized schools. the combination of intramural and extension studies or uniting work with study, and the linking of higher education with a system of permanent education, deserve special mention.

The report on Iran (Abdol Hossein Samii, Reza Vaghefi and Dariush Nowrasteh) is only of academic interest now, following the Islamic revolution. Even the pre-revolutionary system of modern higher- education has a very short history extending back only to 1925, when the era of modern Iran began under Reza Shah. With about thirty per cent of student enrolment in higher education in the whole of Iran, the University of Tehran constitutes the cornerstone of Iranian higher education. Of course, there is nothing distinctively Iranian about the Iranian system of higher education, it being shaped by the French, British, American, and German systems. And with only nineteen universities and fifty-one colleges it is not even fully expanded. This is also reflected in the tradition of overseas education among the Iranian students, which is to a considerable extent supported by the government. The system is entirely financed by the government, which also holds formal authority over the system. The crucial task confronting the system is 'to produce educated, skilled manpower to meet the needs of an increasingly industrialized society.'

The report on Mexico (Alfonso Rangel Cuerra) seems to be typical of the system of higher education in an underdeveloped country, with all its developmental problems and associated tensions. Though the report is best by a paucity of information, at least it is clear that autonomy, finance, university unionsim, indiscriminate expansion of higher education and the consequent social implications, are some of the problems facing the Mexican system of higher education.

Based on the country reports, six issues which are decisive across national boundaries are analysed (Clark Kerr, John Millett, Burton Clark, Brian MacArthur, and Howard Bowen). Clark Kerr clarifies such central intangibles as goals and purposes. The goals that systems of higher education choose or that are thurst upon them reflect 'the stages of economic development, as in the different types of trained manpower they produce ; the central social orientation of each nation and its specific history, as in the different cultural emphasis it seeks to transmit, the comparative attention to social and to individual needs, the kinds of public services provided, and the attention it gives to egalitarian access ; and the status of the nation among nations, as in its contributions to basic research'. This points to the socio-economic and cultural relativity of the systems of higher education.

John Millett analyses the interwoven problems of planning and administering systems of higher education. While the question of finance brings higher education into closer relation with the government in all the countries, the governments appear to be 'somewhat reluctant planners for higher education', though this is more true of the non-authoritarian countries than the authoritarian ones. But even in the latter the situation is not uniformly unproblematic. Accordingly, in all twelve countries, 'there appeared to be some tension between governments and institutions of higher education'.

Burton Clark proposes new definitions for patterns of coordination. He identifies three methods for achieving nationwide coordination of higher education employed by the twelve countries, namely, state authority, market interaction, and academic oligarchy. But he feels that none of these methods should be followed fanatically to the exclusion of others ; rather there should be reconciliation among them. Brian MacArthur sees innovation on a broad scale including institutions' adjustment to the increased demands of mass education, and Howard Bowen presents a plan for countries to follow in judging the efficiency of their system of higher education.

Clark Kerr concludes the analyses with comments on how effective systems of higher education are in meeting their goals. He observes that generally 'the best performed function is the provision of manpower', whereas 'the function most subject to widespread attention at the present time is advancement of social justice'. While improvement of 'quality of life' and 'contribution to social change' are emphasized to some extent by most countries, the 'research function' in higher education is confined to a few developed countries.

The study appears to be an unique contribution to the area of comparative education. Each country report is self-contained and provides useful information and analysis with the help of which the situation in others may be judged. Brief historical notes ; statistics about higher education ; documentary details like extracts of reports and statutes ; and select bibliography would have added to the utility of the volumes only if all of them had some predetermined uniformity. In this context, it should be pointed out that the admonition to the directors of country studies not to follow the circulated guidelines inflexibly, which was intended to help them meet the contingencies of regional variations, has in fact been counter-productive and has in effect sapped comparability of the reports.

One methodological point about which the study is not clear concerns the comparative framework itself. The criteria for the choice of the twelve countries are not made clear. One wonders whether any study of higher education in international perspective could be complete without reference to the experience of the Soviet Union, China and India. Whatever comparisons that have been made therefore suffer from the fallacy of being post-facto.

One last point. Permeating all the country studies is one crucial problem whose ramifications cross the frontiers of established disciplines like economics, sociology and political science, and which warrants a comprehensive understanding. That is the peculiar situation in which higher education is poised to strike a balance between the values of institutional autonomy and public accountability.

N. Jayaram

University Finances in India: A Case Study of the Kerala University by E.T. Mathew : Sterling Publishers, New Delhi, 1980 : Pp. 120, Rs. 32.

Educational Finance, as a subject of inquiry has, in recent past, evinced considerable interest among the academics. Quite a few studies have been conducted about the variegated problems of financing of education as a whole, as also pertaining to different levels of education. The Education Commission (1964-66) commissioned a number of studies about financing of education, the patterns and procedures of central and state government's assistance for educational development etc. A number of individual scholars have also undertaken studies about the significant aspects of educational finance including financing of universities and collegiate institutions.

Realising the importance of studies relating to financing of higher education, the Indian Council of Social Science Research sponsored studies of University finances in collaboration with the University Grants Commission. The study under review is a part of that venture.

The study has been divided into 6 chapters. The first chapter is devoted to an historical survey of the genesis of the University of Kerala and the last one gives the summary and conclusion. One of the chapters deals with the financial relations of the university with the state government and the University Grants Commission. Thus the actual analysis of university finances has been attempted in 3 chapters.

An obvious fact highlighted in the study is about the rapid growth in the revenue and expenditure of the university during the period 1947-48 to 1974-75. The overall revenue increased from about Rs. 41 lakhs in 1947-48 to Rs. 192 lakhs in 1974-75, registering an annual growth rate of 13 5%. In the corresponding period, the total expenditure increased from about Rs. 29 lakhs to about Rs..229 lakhs, indicating an annual growth rate of 25.2%. It has also been reckoned that the university has been having the bulk of the revenues from its own resources. Further there has been gradual decline in the relative contribution from grants received from the central and state government. While in 1947-48, the university's own resources accounted for 17% of the total revenue receipts ; in 1974-75, the percentage increased to 58%. The bulk of the revenues (about 50%) was provided by the examination fees. The state government and UGC grants accounted for about 42% of the revenue receipts.

The analysis of expenditure reveals that 'general administration' and 'examinations' claimed about half of the total expenditure in 1974-75 against a meagre 14% in 1947-48. This is partly because of the successive revisions in the salaries of the non-teaching staff as also increase in the number of examinees. It has also been noted that the examination fees have been the major source of revenue for the university during the period 1956-57 to 1974-75 and accounted for a net surplus of more than one crore of rupees.

The author has also devoted attention to the financial relations of the university with the funding bodies: state government and the UGC. His main conclusions are :

(i) The State Government has fairly wide powers in regulating the working of the university; and
(ii) The university has not been exercising sufficient care and forethought in formulating plan purposals to the UGC.

The first conclusion is derived from the examination of the various provisions of the Kerala University Act and statutes. While these conclusions cannot be disputed on a theoretical plane, it would have been more convincing, if the author had cited some examples of the exent to which the state government has exercised its powers under the Act. For example, how often the government has conducted inquiries into university affairs and how many times they have issued directions to the university for immediat compliance.

The second conclusion has been arrived at from the examination of the fourth and fifth Plan proposals made by the university and the actual allotment of funds by the UGC. I think, the conclusion drawn by the author lacks substantiation because it is based merely on the premise that the UGC, in its judgment, did not provide adequate funds for the purpose. The allotment of funds is based on a number of considerations; the most important being the quantum of resources available with the UGC itself and its own scheme of priorities: So long as the paucity of resources for educational development continues, there will always be a hiatus between the needs of the university and the actual release of funds.

A large portion of the study is devoted to a descriptive account of the dimensions of university financing in a historical perspective. One would have, however, wished that the data should have been subjected to a critical scrutiny and the factors impinging upon the university finances as also its academic ramifications had been highlighted. In fairness to the researcher, it may be conceded that, at places, he has tried to identify the causative factors. But in quite a few case, the conclusions have been based on inadequate data. For example, he has euologised the university for the progress made in research; basing his observations on the rapid increase in the number of Ph.Ds. He has taken note of the fact that while in 1960, only one Ph.D. was awarded, the number increased to 28 in 1975. The position is, however, not so promising when considered in relation to the number of scholars who have registered themselves for this coveted academic distinction. For example, in 1975, 29 research degrees were awarded, while the number of scholars on rolls 3 years earlier was 360 (assuming that it normally takes 3 years to complete research for a Ph.D. degree). Similarly, one should guard against any over-enthusiasm about the publication of papers and completion of research projects by the faculty. There, the main criterion should be the quality rather than the absolute numbers of papers/publications.

Another instance of basing conclusions on inadequate data is provided by the discussion of the financial relations of university with the state government and the UGC. The author sought to examine the extent of realisation of the objectives of the university in the fourth and the fifth plans. Here also, the measuring rod was the quantum of assistance provided by the UGC. This is obviously an extremely inadequate measure of assessment as the UGC itself is hamstrung by paucity of resources and, in many cases, is unable to finance a number of promising schemes.

The study under review, notwithstanding, a few limitations, has presented a good descriptive account of the patterns and magnitudes of financing of the university of Kerala. The data has been painstakingly sifted and presented in an intelligent manner. The narrative avoids economic jargons, that have become fashionable in the present day writings on similar themes. The value of the study could, however, have been enhanced if the analysis had been more penetrating and the factors responsible for the emerging financial configurations had been brought to focus. It would also have been appropriate to avoid some of the generalisations for which adequate evidence was not available.

J.L. Azad

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Our Contributors

Amrik Singh is Secretary, Association of Indian Universities, Deendayal Upadhyaya Marg, New Delhi.

Ashoke Basu is a Professor of Sociology at The California State University, Hayward, California. He has written several books and articles. Much of this article is included in his recently completed monograph—*Culture, Politics, and Critical Academics.* Currently, he is Secretary of the Research Committee on the Sociology of Education of The International Sociological Association.

Ashok Rudra is Professor of Economics in Visva-Bharati, Shanti Niketan, West Bengal. He has published : *Relative Rates of Growth—Agriculture and Industry ; Measurement in Economics ; Indian Plan Models ;* and *Indian Agricultural Economics—Myth and Reality.* He has to his credit 45 Papers on Agricultural Economic Problems and 41 Papers on Non-Agricultural topics—mostly published in different journals and a few in mimeographed services.

C.N.R. Rao is Chairman of the Solid State and Structural Chemistry Unit and the Materials Research Laboratory at the Indian Institute of Science, Bangalore. He is the author of ten books and over 300 research papers dealing with spectroscopy, molecular structure and materials science. He has received several awards in recognition of his research contributions. He is on the editorial boards of 12 inter-national scientific journals including the Materials Research Bulletin and Journal of Solid State Chemistry. He also edits the Bulletin of Materials Science published by the Indian Academy of Sciences.

D.N. Dhanagare taught at the Institute of Social Sciences, Agra University and I.I.T., Kanpur. Apart from the monograph : *Agrarian Movements and Gandhian Politics,* he has published over 25 articles in reputed periodicals. He is currently Professor of Sociology at the Poona University.

G. Ramakrishna is working as Reader in English in the National College, Affiliated to Bangalore University. He has been elected to the Academic Council of Bangalore University for a second term by the teachers. Earlier he had been a member of the Senate also. Presently he is one of the Vice-Presidents of the All India Federation of University and College Teachers Organisations. He has published a number of articles on Vedic literature, Kannada literature, English literature, educational problems, socio-economic studies, Indian Philosophy etc. in English and Kannada. He has also authored a few books in Kannada.

J.L. Azad currently Visiting Professor at the Sardar Patel University, Vallabh Vidyanagar, was Chief of Education Division, Planning Commission, till the end of 1977. Subsequently, his services were commissioned by the ICSSR for a research project pertaining to financing of social sciences research in India. The report of the project, which runs into four volumes is being published. Azad has written extensively on problems of Indian Education particularly on Economics of Education in Indian and foreign educational journals.

M.A. Husain is Lecturer at Centre for Educational Technology, National Council of Educational Research and Training, New Delhi.

M.L. Shahare, Professor and Head of the Botany Department Millind Mahavidyalaya, Aurangabad (Maharashtra) (1952-62) ; Member, Governing Body and Standing Finance Committee, Indian Council of Agricultural Research (1973) ; Member, Governing Body, Sainik Schools Society, Ministry of Defence (1978-to-date) ; Member, Central Advisory Board of Education (1975–77) ; Member, Indian National Commission for Co-operation with UNESCO (1975–77) ; Member, Maharashtra Public Service Commission (1967–68) ; Member, Union Public Service Commission (1968–73); Chairman, Agricultural Scientists' Recruitment Board, Indian Council of Agricultural Research (1973–79); Chairman, Union Public Service Commission since 1979.

M. Raghuram Singh is Professor and Head of the Department of Education in Government College of Education, Madras. He was awarded UNESCO Fellowship in Educational Planning in 1975 and the Commonwealth Fellowship in Education during 1976-77 in the U.K. He is associated with the examination reform efforts of Madras, Calicut and Madurai Universities. He is author of several educational research papers and articles. His areas of specialisation are technical teacher-education, secondary teacher-education, educational evaluation, educational planning and management.

M.S. Swaminathan is Member, Planning Commission. He has been and is Chairman of various national and international committees. He has published over 200 research papers in national and international journals. Dr. Swaminathan has been decorated with many awards and medals and was awarded Padma Shri (1967) and Padma Bhushan (1972). He is recognised as one of the pioneers of green revolution in India.

M.S. Yadav, Professor of Education, Centre of Advanced Study in Education, M.S. University of Baroda, areas of interest are Educational Evaluation and Educational Technology ; has guided several research projects and he has over fifty papers to his credit ; is a co-author of the book "Educational Evaluation" currently he is leading a UGC sponsored project team on developing instructional, modules on Methodology of Educational Research.

N. Jayaram is Reader in Sociology at Bangalore University, Bangalore.

P. Arun Kumar, Research Fellow, Centre of Advanced Study in Education, M.S. University of Baroda; areas of interest are Science Teaching and Cognitive Psychology.

Philip H. Coombs is a well known educationist. He is Vice-chairman of the Board of Trustees of International Council for Educational Development, USA.

S.B. Menon Research Fellow, Centre of Advanced Study in Education, M.S. University of Baroda, currently working for his Ph.D.; areas of interest are Science Teaching and Cognitive Psychology.

S.P. Rastogi is from Accounts Organisation of Lucknow University. He has published number of articles pertaining to Harijans upliftment.

Shakuntala Balaraman is Assistant Professor of Psychology in the Department of Humanities and Social Sciences, Indian Institute of Technology, Madras. She has published research papers in national and international journals and has served as Principal Investigator or Coordinator for many research projects. Her professional interests are in the field of Applied Psychology.

T. Ramasami has served as a part of the evaluation team on several projects in USA, and as consultant to School Boards also in USA. He worked as visiting Assistant Professor in College of Engineering, Univertity of Madras before joining the Union Public Service Commission where he is a Deputy Secretary heading the Research and Analysis Unit in the Examination Reforms Branch.

Vijaya B. Punekar is Assistant Professor of Sociology at the Department of Humanities and Social Sciences, Indian Institute of Technology, Bombay. She is the author of the books, *Son Kolis of Bombay* and *Assimilation : A Study of North Indians in Bangalore.* She has published several papers in the areas of ethnic relations, industrial sociology and demography.

Y. Raghavaiah is Professor and Head, Department of Public Administration, Osmania University. He is also Chief Editor, University Administration ; Member, International panel of Advisers, Institute of Higher Education University of New England, Australia ; and Chairman, Southern Regional Association for Educational Administration (affiliated to Common-Wealth Council for Educational Administration).

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MESSAGE

On the occasion of the completion of 25 years of its work, I am happy to extend my felicitations and best wishes to the University Grants Commission and everyone associated with its work. I recall with some satisfaction that I had the good fortune of occupying the office of its Chairmanship at the very beginning of its statutory career. I have noted with great pleasure that this august body has gone on from strength to strength and made a signal contribution to the development of Higher Education in India. I wish more power to its elbows.

C.D. Deshmukh